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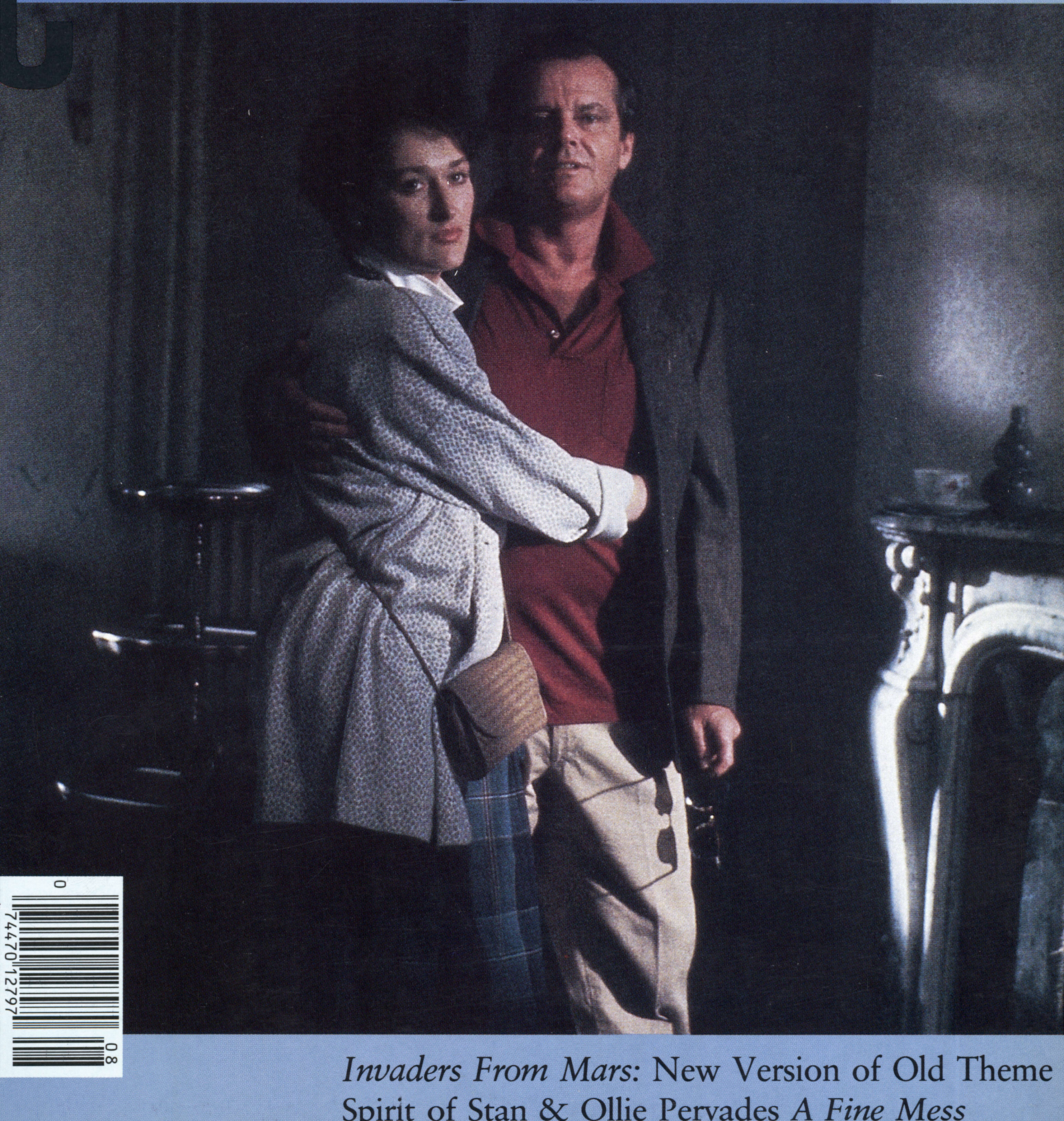

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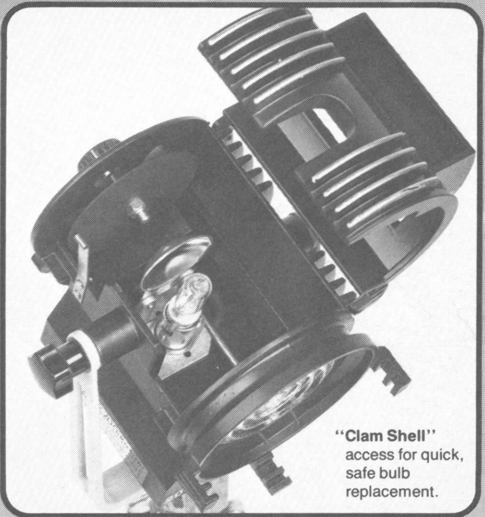
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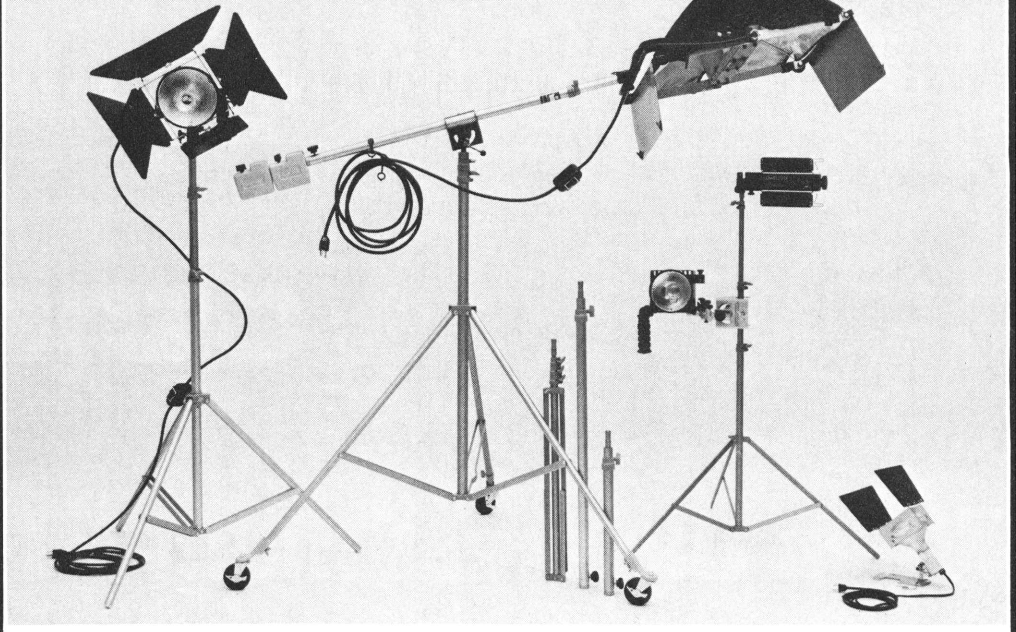

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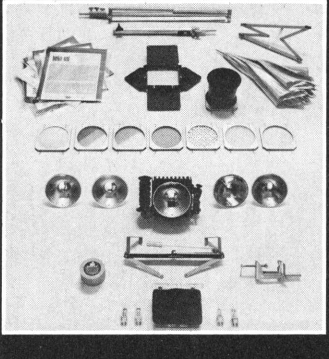

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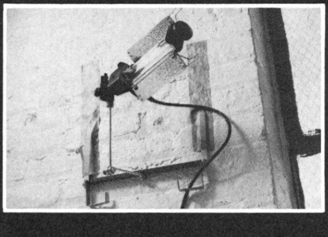

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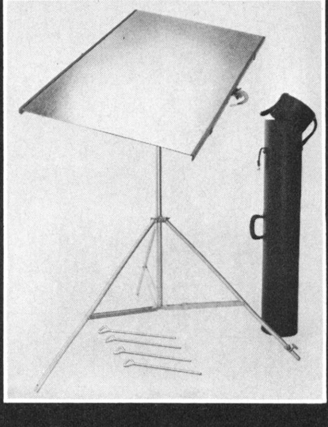

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The International Journal of Film and Video Production Techniques

August 1986 Vol. 67 No. 8

American Cinematographer

Features

28 Making *A Fine Mess*
Edwards and Stradling pursue the gags again

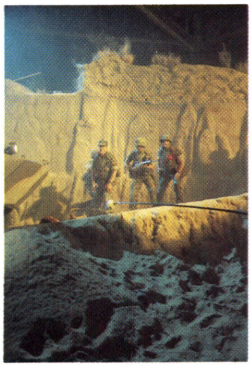
1A Creators of the Dream Machine
Special Hollywood historical supplement

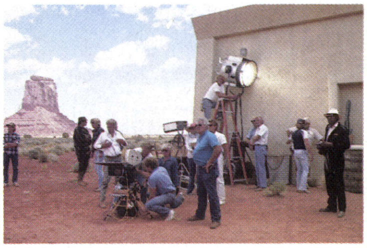
36 Straight Shooting for *Heartburn*
Alemendros aims for simplicity and clarity

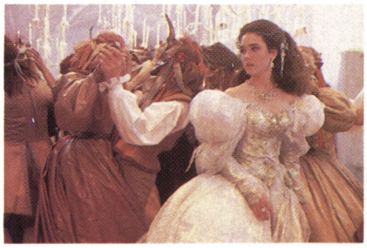
44 The All New *Invaders From Mars*
Lights are the stars in this one

65 *Labyrinth* and *Legend,* Big Screen Fairy Tales
Thomson photographs fantasy

71 Goblin World Created for *Labyrinth*







Departments

10 Letters
14 What's New
24 The Bookshelf
82 Classified Ads
86 Ad Index
87 From the Clubhouse
88 The Last Page

On Our Cover:
Jack Nicholson and Meryl Streep featured in *Heartburn.* Photo by Brian Hamill

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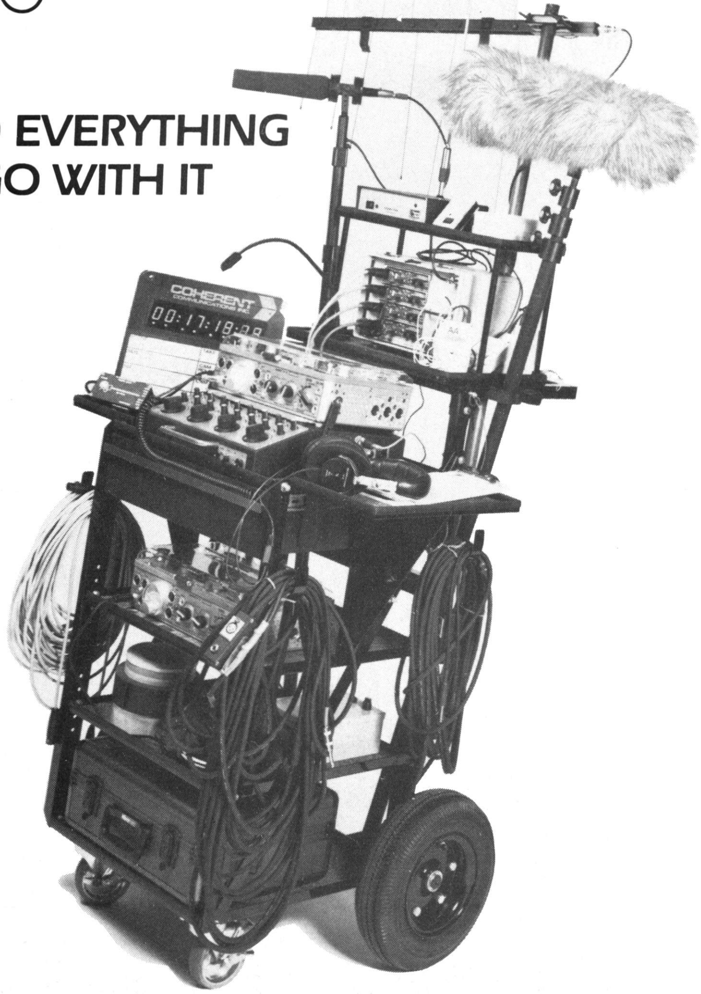

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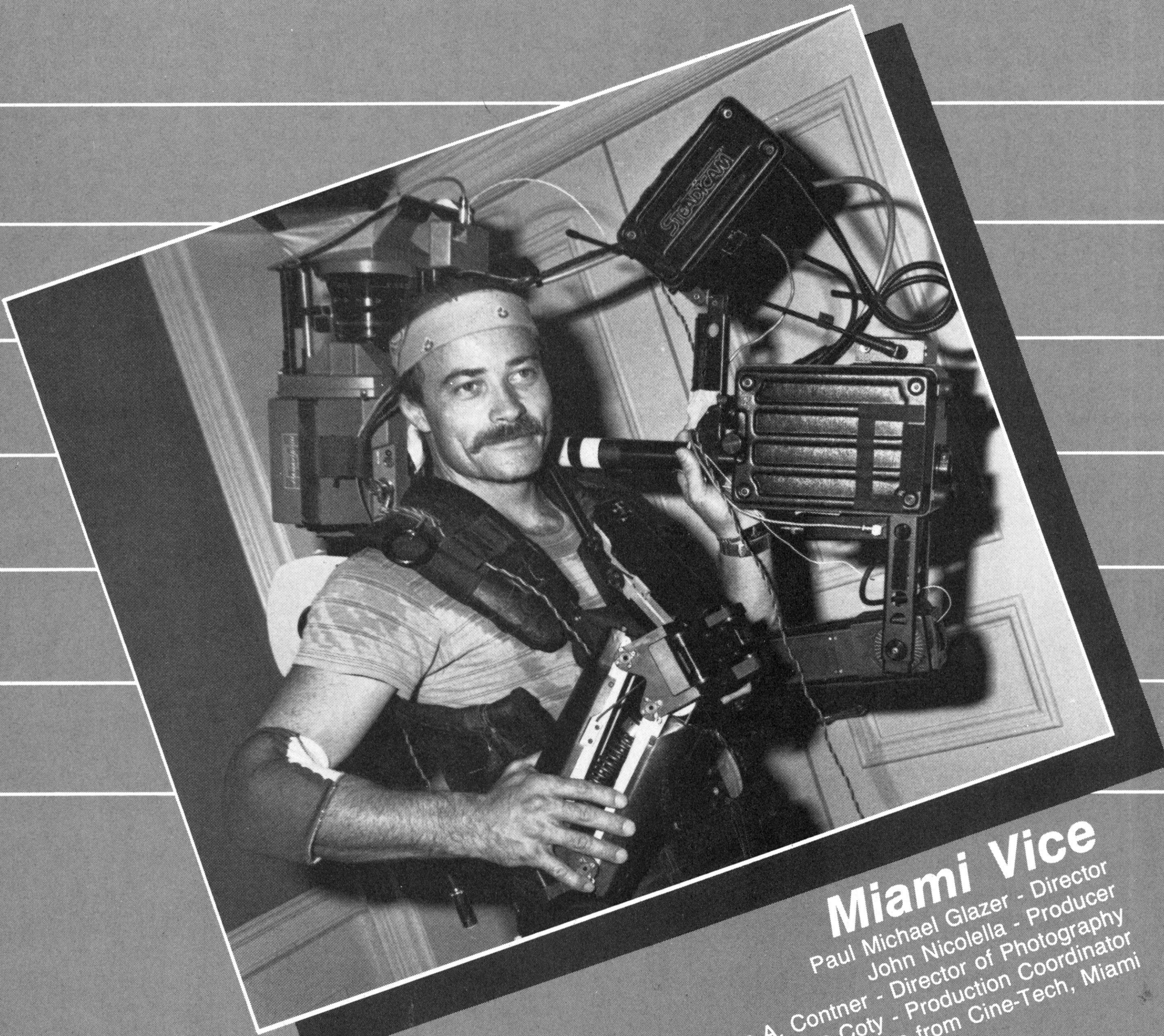

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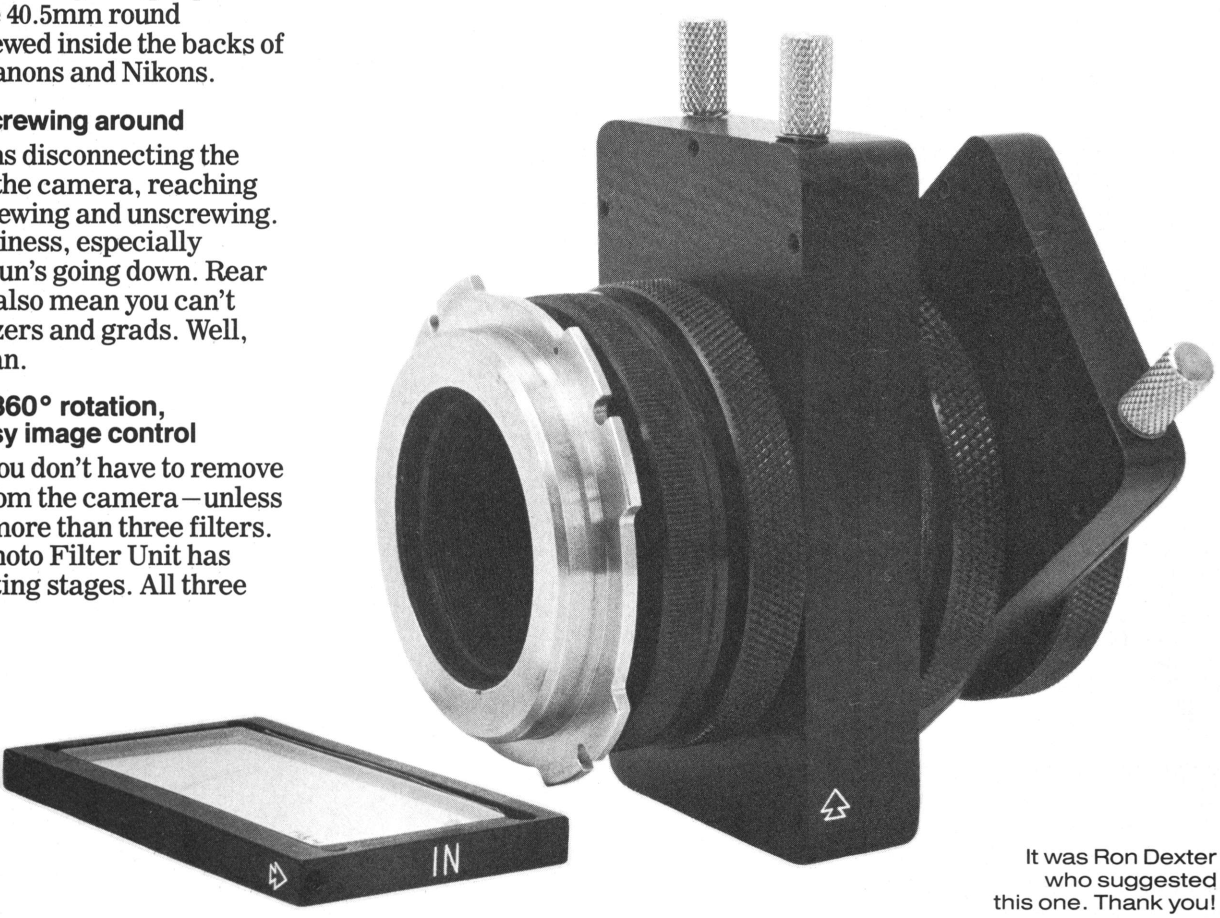
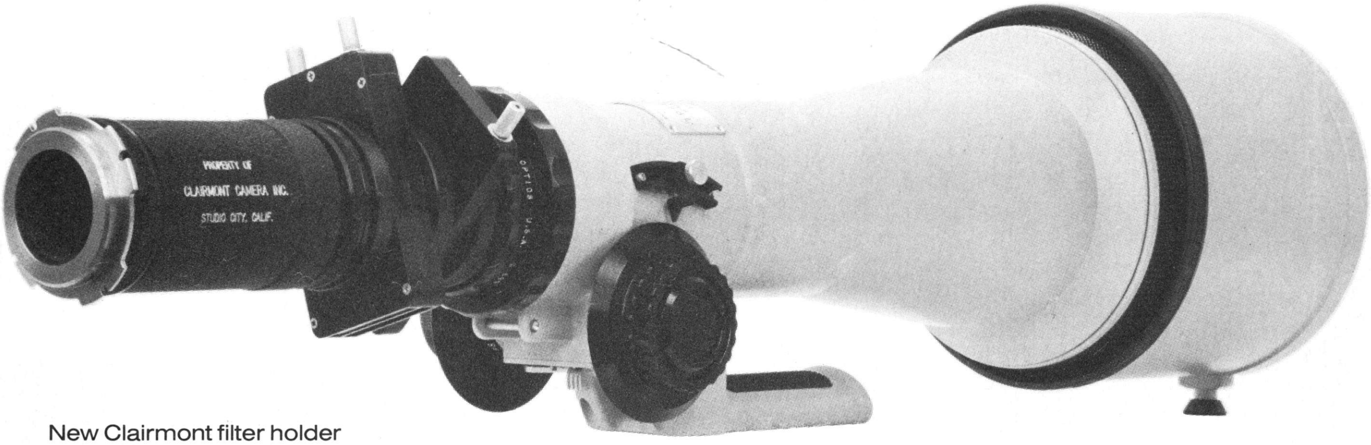


Actual size.

It was Ron Dexter
who suggested
this one. Thank you!



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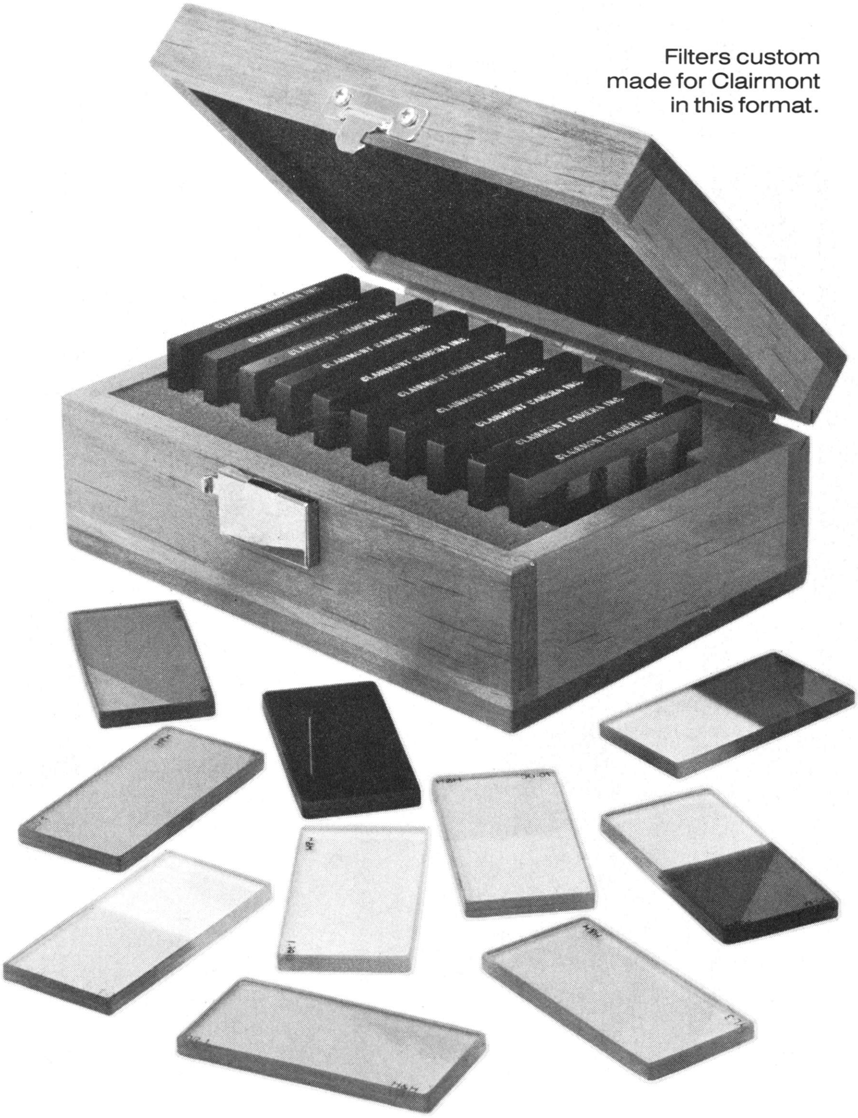

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Letters

History Is a Hit

Bravo to Robert Birchard on his phenomenal contribution – "The Youngest Art is 90 Years Old." He gave us a rare glimpse of the motion picture industry's history that was both informative and very much entertaining. I certainly hope he's around to tell of the industry's first 100 years in 1996.

As a young filmmaker, my hat is off to you for this fine piece of work.

—Dann Cuellar
San Antonio

Learning Experience

As a student of cinematography I find myself in awe of such great cinematographers as Gordon Willis, Nestor Almendros and Vilmos Zsigmond. To me these men are among the best in the business.

If only individuals such as these could help. Help, in the way of implementing programs for serious students such as myself. During the summer if it was possible, to establish a program where students had the opportunity to work among the professionals and get paid at minimum wage to learn as well as work at whatever had to be done.

For those who cannot afford the learning experience of a film school this would be the next best thing.

—James M. Dooney
Durham Calif.

Out of Sorts?

I am quite repulsed at the article, "Lights, Camera, Emulsions for Out of Africa" (February 1986), which showcases David Watkin. I find it hard to believe that this embarrassment to British cinematographers was chosen for this noble project – especially considering Sydney Pollack's outstanding choice of cinematographers in the past.

This epic film that had so much photographic potential turned out to be the greatest disappointment in cinematography this past year. I thought to myself, 'all right, I'll mourn for three months, then I'll get over it – which I did, until the February issue of *American Cinematographer* came out.

In this article, Watkin speaks of the magical Agfa high speed film stock that supposedly offers an extra "octave" to the cinematographer, and Agfa quoting Watkin in their advertisements about the film stock that is "almost impossible to overexpose." Almost impossible, that is, until Watkin got his hands on it, and did the impossible: he overexposed it.

In *Out of Africa,* there are shots of Meryl Streep walking in the shade, outside of which is a grotesquely burned-out background.

Watkin's obnoxious vanity about the whole thing, and especially his denunciation of Kodak 5294 as "much more grainy," is hard to bear.

I would expect the Academy to recognize cinematography as density, grain, depth of field, and if they did, then choose either Allen Daviau or my choice, John Seale.

—Brent Kay
Cupertino, CA.

Large Formats

Re: Charles Slater's letter in the May issue, according to a contemporary *Variety* article, 70mm prints of *Oklahoma!* were tailored to the individual roadshow theaters. Like Cinerama, each theater had to be specially modified for Todd-AO and the film's release was staggered to allow for this, so it was possible and not overly expensive to do this, especially since not more than 20 70mm prints have probably ever been made on the film. According to a couple of *American Cinematographer* articles in the mid-Sixties, MGM Labs made special prints to compensate for the different curvatures of the screens of dome theaters that were being built at that time.

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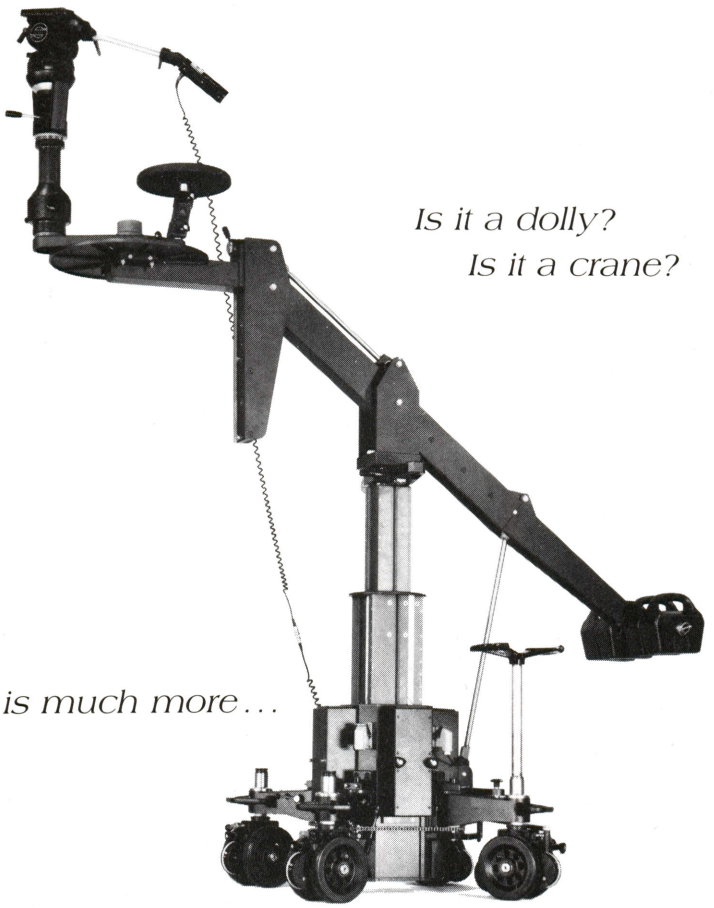

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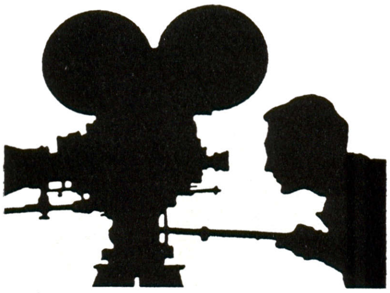
Incidentally, while *Oklahoma!*'s production was headquartered out of MGM's studios in Culver City, no Hollywood lab was equipped to handle the 65/70mm stock so negative and print processing were done by CFI's New Jersey plant while dailies and release printing were done at the American Optical plant in Massachusetts. Early in 1955, Technicolor installed facilities for handling all film formats and would do all 65/70mm work in the United States over the next decade. Because of the small number of prints required, they did *not* adapt one of their dye transfer machines for 70mm printing.

Re: the 35mm 30 fps release of *Around The World in 80 Days,* this is the first I've heard of it. While the investors in *Oklahoma!* insisted on a concurrent 35mm CinemaScope version being shot, for *Around The World,* two 65mm takes of each scene were done, one at 30 fps for the 70mm release, the other at 24 fps to be printed down to Technicolor matrices for the 35mm release. According to *Variety* a test printdown was made of *Oklahoma!,* but its 30 fps filming speed made it impractical for use on most existing projectors. The reason for the foreign release of the 30 fps 35mm version of *Around The World* may have been due to cost, it being cheaper to make 35mm prints, and with no 70mm facilities outside the US, cheaper than making 70mm prints here and paying export duties.

—Rick Mitchell
Hollywood, Calif.



Things to Come . . .

If *Howard, the Duck* sounds like a strange name for a movie, we are here to tell you it is an even stranger name for an alien. However, our September issue tells The Duck story from the viewpoint of Richard Kline, ASC, who has photographed this strange creature for the newest George Lucas adventure.

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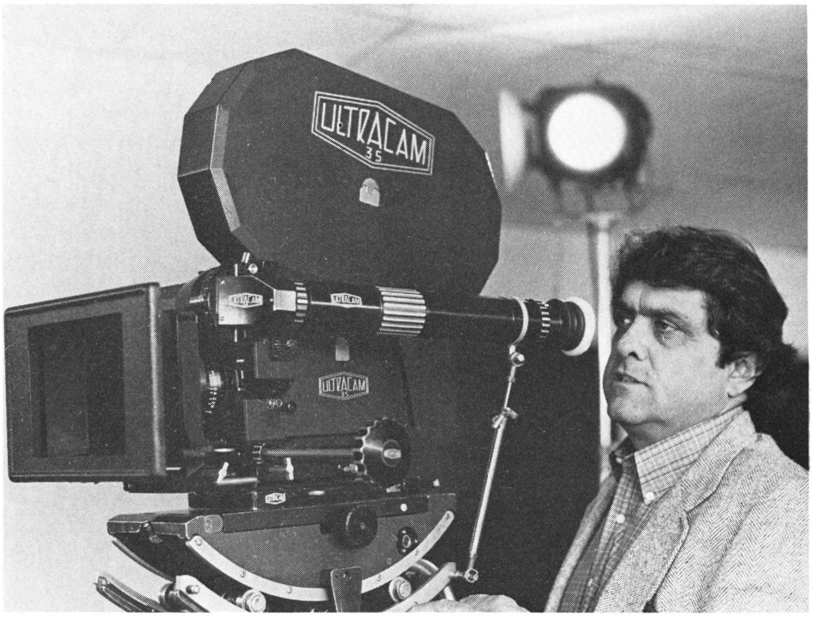
What's New

What-if Projections Aid Design of Ultracam



Hector Figueroa uses the Ultracam

Photo by Timothy Dunford

Dennis Smith works in the movie industry, but he's neither behind the camera nor in front of it. Smith, an engineer based in Hollywood, designs and manufactures cameras.

Smith works with Ultracam, Inc., a seven-year-old company that produces 35mm motion picture cameras and lenses and is a subsidiary of Leonetti Cine Rentals.

Traditionally, movie cameras are either bulky or noisy or both. "With a normal camera," explains Smith, "during filming the sound people pick up the sound of the camera whirring away." To cut back on the noise of camera operation, studios covered the camera to block out its noise – a technique that resulted in heavy and unwieldy cameras, which were less than ideal for filming fast-paced, close-to-the-action movies. With sound cameras, noise is kept to a minimum. The camera is also remarkably light, weighing as little as 28 pounds.

In 1979, when Ultracam introduced its first camera, software for design professionals required a mainframe computer. The expense of setting up a workstation for computer-aided design work was about $100,000 – well beyond the range of small and mid-size companies. Ultracam (which has between five and seven employees depending on its workload), did its camera design work by hand. Two draftsmen worked directly on vellum, a parchment-like transparent paper from which blueprints are made. Three employees, working full-time, handled the revisions, updates, and corrections required for a finished blueprint.

In 1982, Ultracam began using AutoCAD, multipurpose drafting software introduced only months earlier by Autodesk, Inc. of Sausalito, California. "The drafting aspect of our work," notes Smith, "radically changed." Instead of drawing on vellum, draftsmen now create their designs while working on a microcomputer (a Zenith Z-100). The company's two plotters, both from Bausch & Lomb, then plot directly on vellum. "We redid our schematics using CAD," says Smith. The advantage: quicker drafting time (since the program determines coordinates and connects lines automatically), and ease of revision.

As with documents created through word processing, the drawings done with the CAD system can be called up on the micro and adapted or updated as needed. A drafter can rotate drawings for a different viewpoint, and zoom in on a particular area for a close, magnified look at one section of a drawing. And time is no longer wasted redrawing frequently used mechanical parts; the company creates and stores its own library of standard mechanical shapes, and simply recalls those shapes whenever they're needed in a drawing.

To maintain its technological leadership. Ultracam constantly updates and revises its designs. For Smith, the ease with which drawings can be revised with AutoCAD is a crucial time-saver. Another benefit for Ultracam is that drawings done on the micro can't be tampered with as easily as paper-and-pencil drawings. "They're in ink, which means there's no chance of accidental erasure," says Smith. One of the hardest elements to control in the design process, according to Smith, is the tendency of designers to make changes on an original blueprint – changes that have not necessarily been fully approved. With CAD, the original design can be safely stored while revisions are tested on duplicates.

In addition to its use as a standard drafting tool, AutoCAD is used at Ultracam to determine optimum designs. When he designs a lens, Smith explains, he stacks as many as 20 separate housing elements atop one another. By laying out hypothetical geometric arrangements of the lens elements, he can see whether the various pieces of glass will match up rather than interfere with each other's opera-

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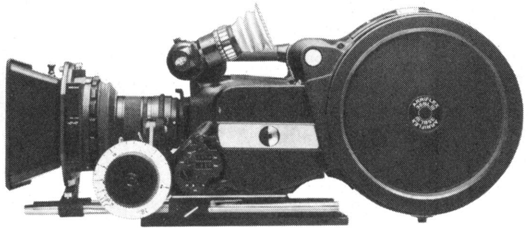

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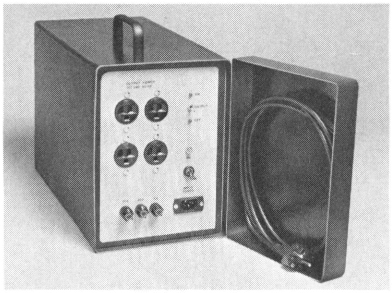
tion – all without actually going to the work of creating a finished design. Since every camera Ultracam makes generally has a set of seven lenses, and each lens can have as many as 20 separate housing elements surrounding the lens glass, what-if scenarios play a major role in the camera's design.

Before switching to AutoCAD, Smith notes, "With three people drawing you could always tell who drew what. There'd be differing line thicknesses, or one person would write at a backslant while another wrote in italics. Now, the designs are standardized, and the original draftspeople have more time to do other tasks." Instead of having three people working on updating blueprints, as it formerly did, Ultracam has only one person; the other two are freed for different projects. (Like many companies, Ultracam has discovered that work expands in direct proportion to available time.)

CAD is also coming into play in the design of a new camera. The K-35, an entirely microprocessor-controlled 35mm motion picture camera, will be, Smith promises, "the very first of its kind to be commercially available." Ultracam will be using its CAD software for drafting designs of its camera and for making what-if decisions in laying out the geometry of the camera's lenses, rather than doing their drafting by hand and determining geometric layouts through trial and error.

The Ultracam has been used to date on about 50 movies, among them *Poltergeist, Jagged Edge,* and *Weird Science,* and on more than 30 TV series, including "Cagney and Lacey."

– Keven Seaver



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A new line of portable AC power sources converts unstable "dirty" AC power anywhere worldwide into regulated 117VAC, 60Hz (plus or minus 2%) sinewave power, without range switching or other adjustment.

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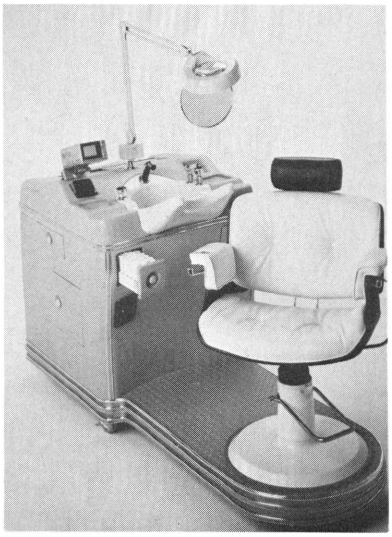
Units are intended for TV or film crews on location, as well as communications or other electronic systems users in foreign situations. For further information contact: Diego Power, 5350 Eastgate Mall, San Diego, CA 92121



Mobile Salon Introduced

A new concept in convenience, the Nu Visage Mobile Salon has been introduced for use in all facets of the entertainment industry where a "camera-ready" appearance is essential. Lightweight and durable, due to its space age fabrication, the salon glides easily from one location to another, through any standard door, and onto most elevators. It delivers haircare, makeup, and camera ready capabilities to the studio or on location, eliminating the need for inefficient setups.

Standard features include an all prupose chair with hydraulic lift; the Caress basin, designed so that the hair fans out for cleaner rinses and for efficient use of the hot and cold water supply, and an ample supply of hot rollers. Generous storage space is pro-

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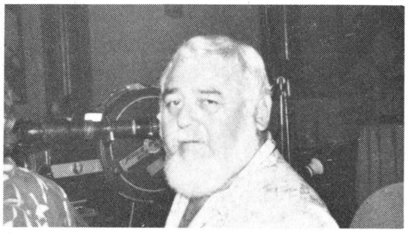

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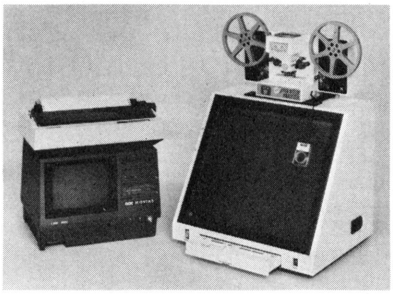
More information about the Nu Visage Salon is available from Halcyon Tech, Inc., P.O. Box 35395, Houston, Texas 77235 (713) 771-3603.



Motion Analysis System

Instrumentation Marketing Corporation has introduced the new NAC Movias Model 200A motion analysis system designed for quantitatively analyzing movement of recorded objects in such fields as physics, biomechanics and various industrial/government applications.

The system comprises a precision film analyzer with data processing and display capabilities. The amount of movement, velocity, acceleration, force, momentum, energy and power of moving objects are calculated by the Movias software package from data points simply input from the measurement points of the projected image. Man-machine communication is through the CRT display in the user friendly system.

Results are given graphically on the color CRT display and/or to the printer. Outline and stick figures are also a part of the output.

For further information, contact Instrumentation Marketing Corporation, 820 S. Mariposa, Burbank, CA 91506. Telephone (213) 849-6251.

Portable Motion Control System

Elicon is proud to announce the design and fabrication of a field computer system which can interface directly to the Mini-Mote pan tilt head and the Matthews Camera-Mote pan tilt head. This system was recently introduced at NAB in Dallas, Texas.

The system allows the cameraman to pre-record his movements for the pan tilt head and later play them back accurately at any speed he wishes. This allows increased creativity and flexibility of rental pan tilt heads.

The obvious applications are table top product shots, television studio activity and repeat pass matte work in the field.

The computer system has been designed for easy programmability by single button operation of a function key. Up to 2,000 points can be stored by the computer and smooth moves laid in between any set of these points. All moves are recorded on floppy disk and can be recalled at any time by the system. The computer system can be separated from the pan tilt head by over 250 feet, allowing for increased flexibility when using Louma cranes or other types of booms.

For more information: Elicon, 940 S. Leslie St., La Habra, CA 90631. (714) 870-6647.

Housing system

CAPSULE "8" by Aqua Vision Systems Inc., is an all-weather, underwater miniature housing system to encapsule the remarkable ultra-compact Sony 8mm Handycam Camcorder. Made of aluminium weighing less than 8 pounds in air. It produces equally sharp images above and below water. A simple on/off switch controls the 2 hours of 8mm tape. (It has a 94° angle of coverage with 1" to infinity depth of field.)

The entire system, consisting of the Sony 8mm Handycam Cam-

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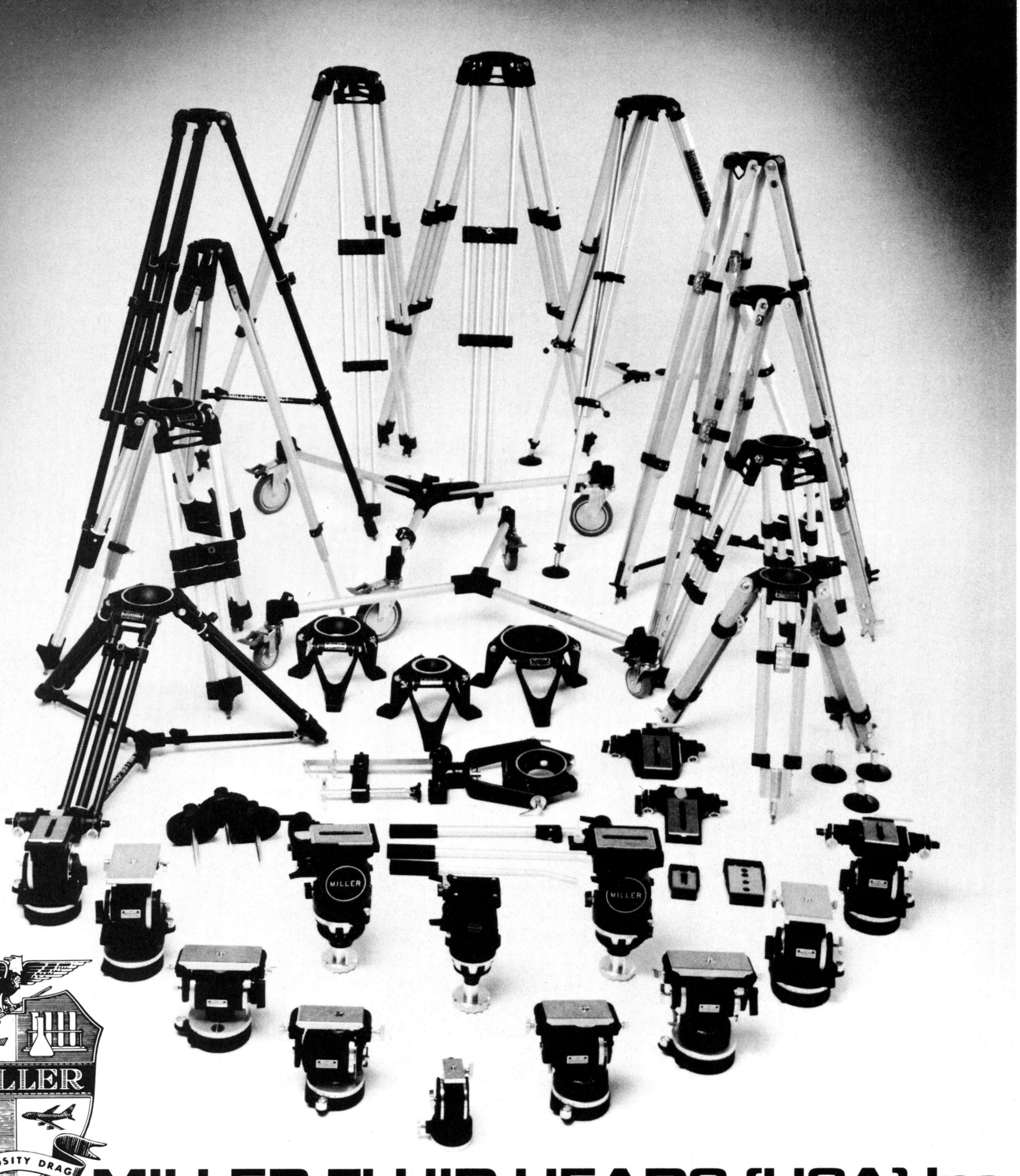

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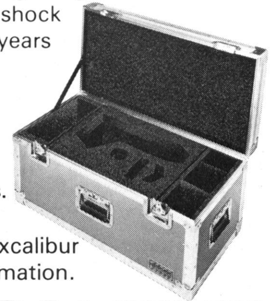

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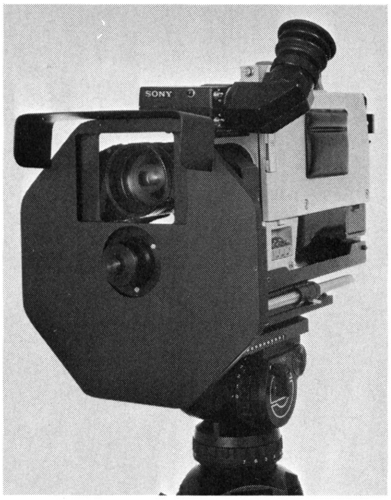


Rain Deflector

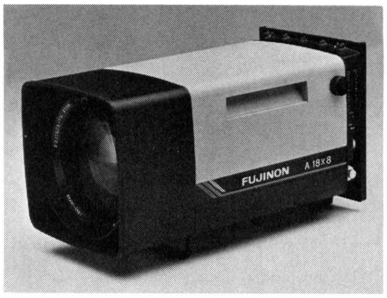
A new generation of rain deflectors, called Action Disc, has been developed by the company Filmtechnik Fromm, 8011 Munich-Zorneding. It is offered in three different sizes.

The smallest one has a disc-diameter of 270mm which fits filters 3x3" (75x75mm). This is suitable for 16mm cameras with zoom lenses as well as for 35mm standard focus (fixed focus).

Size "300" is for filters 4x4" (100x100mm) and especially suitable for 35mm high speed lenses as well as small zoom lenses for 35mm format. It can be used with all well-known video ENG and EFP cameras. Action Disc 400 is developed for zoom lenses, especially for high speed anamorphic systems and allows the use of 6.6x6.6" filters.

These rain deflectors can be used in connection with the Arri bridge plate system. For video cameras a universal adaptor for Sachtler Video 20 and video 25 is available. A smooth running of the Action Disc is obtained by a new arrangement of the drive. Action Disc is provided with a variable speed in order to reduce the gyro effect.

Write for more information: Filmtechnik Fromm Spicherenstr. 12, 8000 München 80, W.-Germany.



New ⅔" Studio Lenses

With the introduction of the new A18x8ESM and A15x8ESM studio zooms, Fujinon brings many of the modular design concepts from its large format lenses down to ⅔-inch. The changes result in improved performance, reductions in size and weight, and increased reliability and serviceability.

Major components are modular and interchangeable. The same manual and servo modules, pattern projectors, etc. work with both lenses as do the optional pan-bar mounted and remote control demand units.

Controls and adjustments are accessible even with the shroud in position. These include the back focus adjustment and lock, servo/manual switch for the built-in 2X extenders, pattern projector color levels and chart positioning, and tally light switch.

To provide additional production support, data such as focal length and aperture is reported through LEDs on the sides of the lenses. Ramping can be avoided in these two new Fujinon lenses by limiting the zoom range (on the remote zoom control handle) to match lighting levels for any production. It is also simple to see if the extender is in position and, if not, to deploy it from a remote demand unit, shot box or manually from the lens itself.

Both of the two new lenses have a maximum aperture of F1.5 which remains flat from 8mm to 114mm (F1.6 at 120mm). Minimum object distance is 0.7m and weight is slightly more than 9kg. The A15xBESM has a focal range of 8mm to 120 (16mm to 240mm with the built-in 2X extender deployed) while the A18x8ESM goes from 8mm to 144mm (16mm to 288 with the 2X extender).

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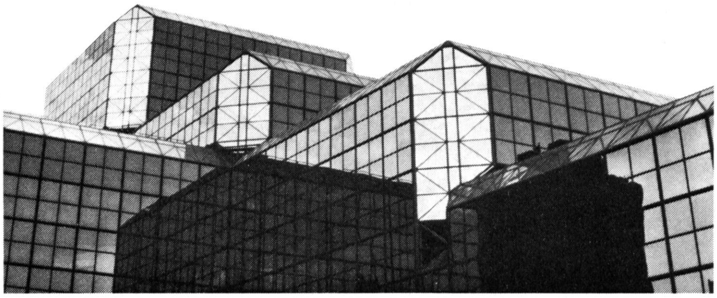

For information, write or call:

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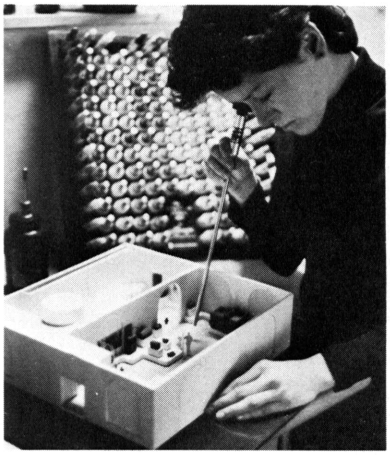

Modelscope for Scale Models

A computer designed optical system that provides a life-size view of photographic scale models is now available from the Lenox Instrument Company of Trevose, PA.

The Lenox Modelscope enables users to see and photograph model details from the same perspective as they would appear at full scale. This unique feature allows directors, photographers and videographers, visual designers, set construction, model and optical shop personnel and other photographic professionals to view fine design details and perspective before expensive, time-consuming model photography takes place.

The scope's narrow shaft can penetrate model openings as small as .260″ dia. for a clear view at distances from .394″ to infinity. The instrument's 12″ working length permits its use from a comfortable distance, especially with large or fragile models. In addition, its 50° field of view provides a frame of reference analogous to a normal lens.

Each Modelscope is furnished with 49mm and 52mm adapters to permit attachment of any still, motion picture or video camera for photographic documentation; a variety of other standard filter rings can be attached as well.

Complete engineering, pricing and delivery details are available on request from Lenox Instrument Company, 265 Andrews Road, Scottsville Industrial Park, Trevose, PA 19047 Telephone: (215) 322-9990. TWX: 710-670-1440. △

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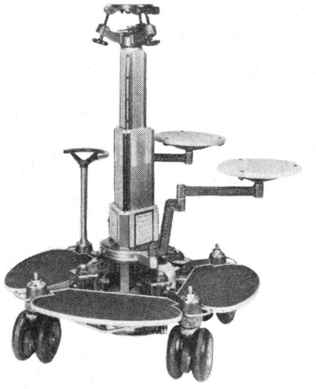

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The Bookshelf

by George L. George

Film critic Peter Stowall's **John Ford** offers original insights into Ford's vision of the American dream. He charts the different styles that identify Ford's films, and outlines the narrative structure of *Stagecoach* and *The Searchers* as prototypes of the director's pictorial and thematic fusion between the real history of America's growth and its mythical counterpart *(G.K. Hall, Boston, $16.95)*.

The liberal political views of Jean Renoir and their reflection in his films are explored with thoughtful objectivity in Christopher Faulkner's **The Social Cinema of Jean Renoir.** The book also describes descerningly Renoir's evolution from his socially explicit films (*La Règle du Jeu, La Grande Illusion*) to esthetically oriented movies like *The River* and *French Cancan (Princeton U. Press, Princeton, NJ, $35)*.

Two slim but significant volumes of writings by Sergei Eisenstein add to our understanding of the Soviet director's contribution to cinema. Edited by leading Eisenstein expert Jay Leyda, **The Short Fiction Scenario** and **Eisenstein 2** deal respectively with the film adaptation of literary material, and with theoretical and personal considerations of filmic problems *(Ungar, NYC, $7.95 ea.)*.

A unique reference work, **Film Review Annual 1984,** reprints in their entirety reviews published in 23 widely different periodicals. This third annual volume, expertly edited by Jerome S. Ozer, assembles up to 2,000 reviews of some 300 films released in 1984, and includes full cast-&-credits, production data, extensive cross-indexing and major awards, making it an invaluable research tool *(Ozer Publ. 340 Tenafly Rd., Englewood, NJ, $75)*.

In **Talking Animals and Other People,** Shamus Culhane, a creative artist and a leading figure in the animation field has written a lively, engrossing autobiography that is also a fascinating account of the US animation industry. He describes his collaboration with Disney, Fleischer and Lantz, his contribution to Mickey Mouse, Donald Duck, Popeye and Betty Boop, and his extensive work in TV commercials *(St. Martin's, NYC, $24.95)*.

From Mack Sennett and Hal Roach to Mel Brooks and Woody Allen, **Movie Comedians** by James L. Neibaur is a thoroughgoing guide with extensive filmographies, to the work of outstanding screen funnymen. The styles and techniques of Chaplin, Keaton, the Marx Brothers, Fields and many others are perceptively assessed and analyzed *(McFarland, Jefferson, NC, $25.95)*.

In **Screwball Comedy,** Wes D. Gehring takes an informed look at an unconventional film genre where, in a reversal of traditional roles, a determined female pursues a generally incompetent male at the expense of established social patterns *(Greenwood, Westport, CT, $29.95)*.

Compiled by Gretchen M. Bataille and Charles L.P. Sillet, **Images of American Indians on Film** is a comprehensive annotated bibliography that opens up an in-depth perspective on the evolution of this genre throughout the 20th Century. Also included is a list of some 400 related sound films currently available for study *(Garland, NY, $34)*.

Hollywood night life in the Golden Era is evoked by Jim Heimann in **Out With the Stars,** a warm and sentimental backward look at those long-gone days. An abundance of period photos of stars having a good time, typical menus, postcards, matchbooks and sundry mementos illustrate Heimann's effusive text *(Abbeville, NYC, $39.95)*.

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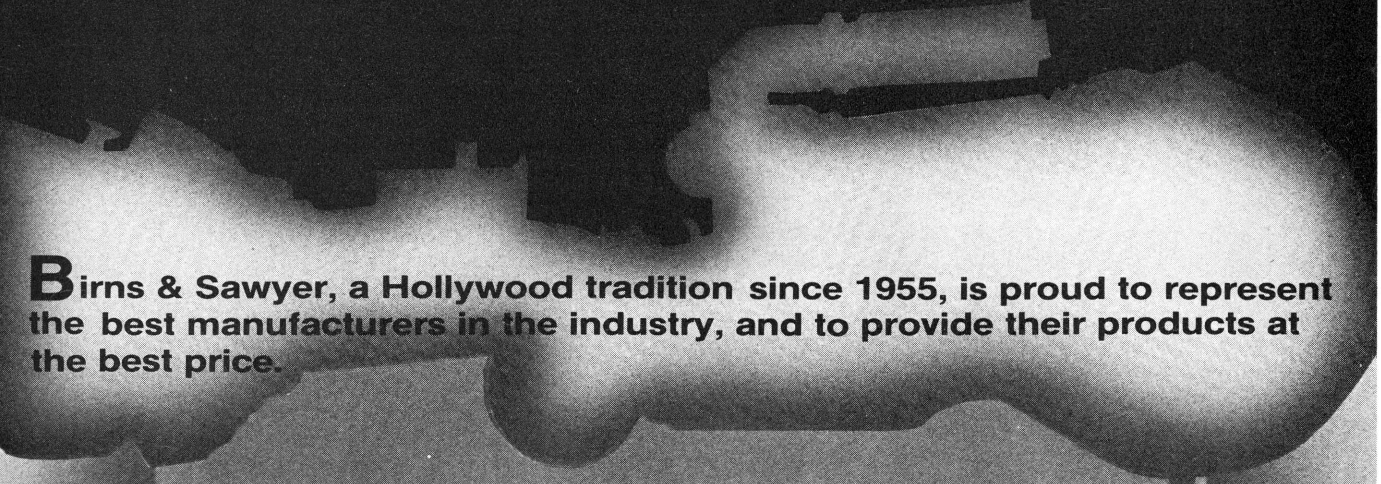

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Published film scripts have recently been appearing in increasing numbers. With **Five Screenplays by Preston Sturges,** Brian Henderson provides a biographical sketch of the writer/director's adventurous life and discerning essays of the nature and style of his scripts *(U. of California Press, Berkeley, $18.95).*

Penelope Gilliatt's brilliant script of John Schlesinger's **Sunday Bloody Sunday** represents a milestone in its handling of a mature theme without compromise or vulgarity *(Dodd Mead, NYC, $16.95/8.95).*

Prof. Joanne Klein's study of Harold Pinter's film work, **Making Pictures: The Pinter Screenplays,** selects sequences from 8 films to illustrate his narrative method of presenting the "opaque surface of reality" *(Ohio State U. Press, Columbus, $22).* Fassbinder's depiction of post-war Germany's doomed aspirations comes strikingly through in the screenplay of **The Marriage of Maria Braun,** with additional material on the director, reviews and comments, a filmography and a bibliography *(Rutgers U. Press, New Brunswick, NJ, $25/10).*

A well-illustrated screenplay of the Gene Kelly/Stanley Donen film, **Singin' in the Rain,** written by Adolph Green and Betty Comden, makes for delightful, evocative reading. Eric Rohmer's script for **The Marquise of O-** is a successful example of adaptation of a classical work, Heinrich von Kleist's novella that is included in this volume *(Ungar, NYC, $8.85 & $9.95).*

Two British writers and one Australian deal with off-beat subjects. Peter Greenaway's **A Zed & Two Noughts** comments ironically on the freakiness of human fate. **My Beautiful Launderette** by Hanif Kureishi is a bittersweet portrayal of a Pakistani's life in London. Australia's entry, **Bliss,** by Peter Carey and Ray Lawrence, satirizes man's happy accommodation to life in Hell *(Faber & Faber, Winchester, MA, $11.95, $8.95, $11.95).* △

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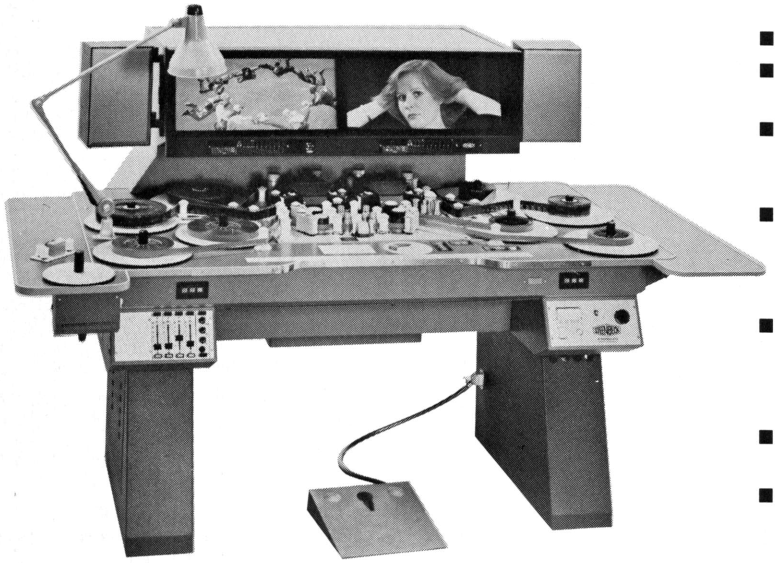

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Photos by Len Hekel

Making *A Fine Mess*

by Robert S. Birchard

One of the indelible images of the movies is the sight of Stan Laurel and Oliver Hardy struggling to move a piano up a seemingly endless flight of stairs. The scene is from the comedy team's only Academy Award winning short, *The Music Box,* and it was the inspiration for Blake Edwards' latest Columbia release, *A Fine Mess.*

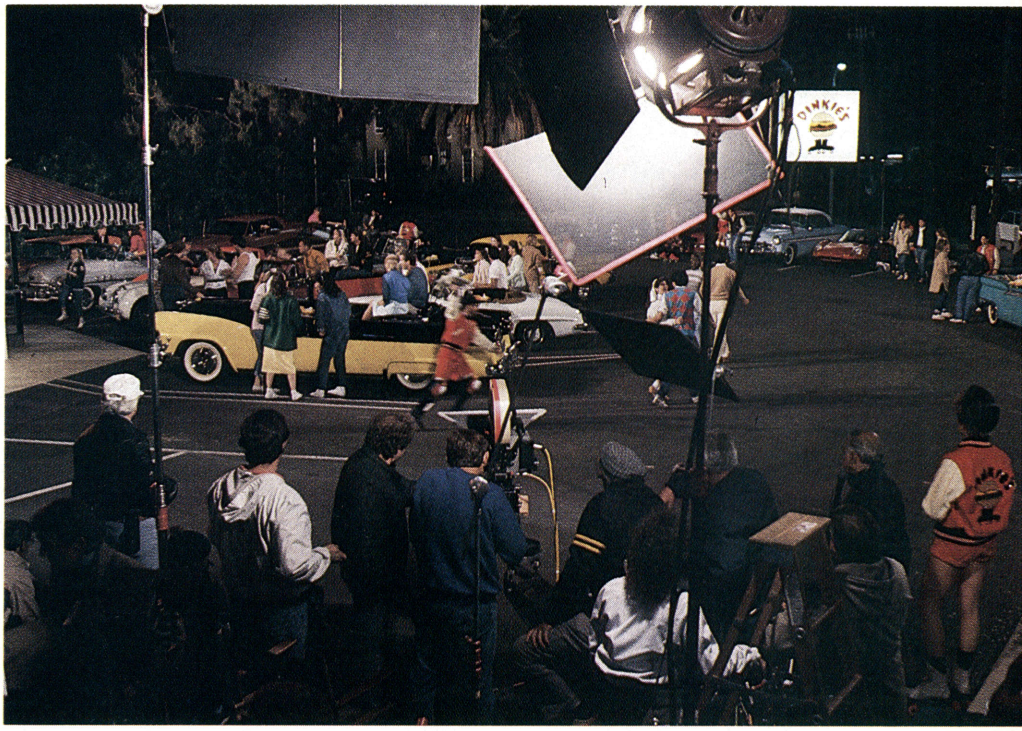
Edwards' affection for Laurel and Hardy is well known – he dedicated his film *The Great Race* to the memory of the comedians and their work; but the writer-director's own comedies were always quite different from those of Stan and Ollie, tending to emphasize intricate ensembles among a number of comic characters playing off a "straight" man (or woman) to hilarious result. With this picture, however, Edwards sought to re-create the comedy team – not in imitation, but in spirit.

To this end, Edwards obtained the re-make rights to *A Fine Mess,* with the idea of using the piano moving sequence as the centerpiece of his own film. Initially planned as a vehicle for Burt Reynolds and Richard Pryor, Edwards' determination to bring the picture to the screen overcame the on-again off-again merry-go-round of Hollywood decision making, and the film finally started shooting in March of last year with Ted Danson (star of TV's *Cheers*) and Howie Mandel (from TV's *St. Elsewhere*) in the leading roles, and with veteran cinematographer Harry Stradling, Jr. ASC, behind the camera.

Stradling began his association with Edwards on *S.O.B.*, an association that both men have found rewarding. Like Edwards, whose grandfather directed Theda Bara in *Cleopatra*, Harry Stradling, Jr. comes from a "picture" family. His uncle, Walter Stradling, was a cameraman with Mary Pickford and his father, Harry Sr., was a leading cinematographer with such pictures as *Carnival In Flanders* and *Funny Girl* to his credit. Harry served his apprenticeship with Robert Surtees at M-G-M in the 1940's, and he was trained in the classical school of movie lighting. It was this aspect of Stradling's background that first appealed to Edwards.

"I like to see everything on the screen," says Stradling. "In real life we see a broad range of light. If you're in a dark room you can still see some detail even in the darkest shadows. On the screen, it should be the same. I don't like to see things falling off to black – "

"That's one of the things that charmed Blake when he first talked to Harry," says associate producer Tony Adams, "When Blake asked him what his approach was, Harry said: 'I like to see it on the screen.' "



DINKIE'S
BARBEQUE
MILK SHAKES

Above: ***The ultimate drive-in parking lot, designed by Roger Maus.*** **Below:** ***Dinkie's, the drive-in that had to be built on the set because in the 80s they are largely extinct.***

While the taste of Stradling and Edwards meet in this common ground, the two would seem to disagree about Harry's basic approach to a given assignment. The pragmatic cinematographer insists, "I approach every project the same way;" but Tony Adams, says that part of Stradling's appeal for Edwards is that "Harry brings something new to each project.

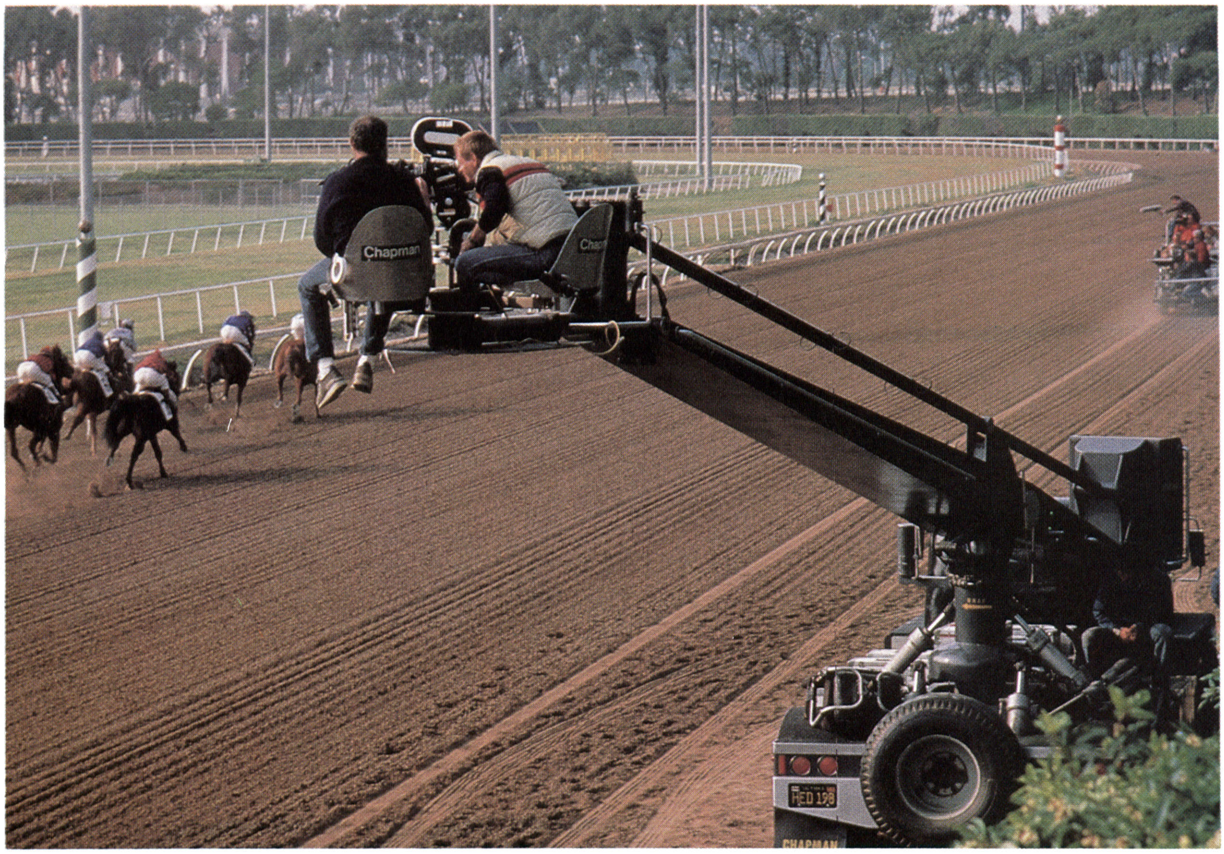
"Blake's pictures are very rich looking," says Adams, "and they require a high style. That 'Hollywood' look that Harry brings to his work is a style that seems to be coming back into vogue."

Part of that style is derived from a series of "don'ts" that were drummed into the cinematographer's head during his years as an assistant at M-G-M.

"We were never given any reason, they were just rules that they set up – and I couldn't even tell you who 'they' were. The rules weren't written down, or anything like that, but we all knew them. Things like – *don't let the backlight hit the actor's nose* – or – *never pan with a 25mm lens*. I remember working with a young director a few years ago, and he asked me to put on a 25 and do a pan, and I told him that you couldn't do that, and he asked me why. I couldn't tell him. There's no reason why you can't, so we shot it. I've even seen a backlight hit an actor's nose, and it just doesn't look that terrible.

"But a lot of things I learned from Robert Surtees have

Santa Anita racetrack, which is prominently featured in the film. **Below:** *The thunder of hooves and how they are captured on film.*



stayed with me. One thing he used to say is that it's not terribly important how the actors are lit when they're moving, so long as they look good when they stop.

"Sometimes you have to cheat. You may have an actress sitting next to a lamp – and that's your source light, but she looks bad. If she looks good, people won't say, 'Oh, the source light is wrong,' but if she looks bad, they'll sure tell you she looks terrible."

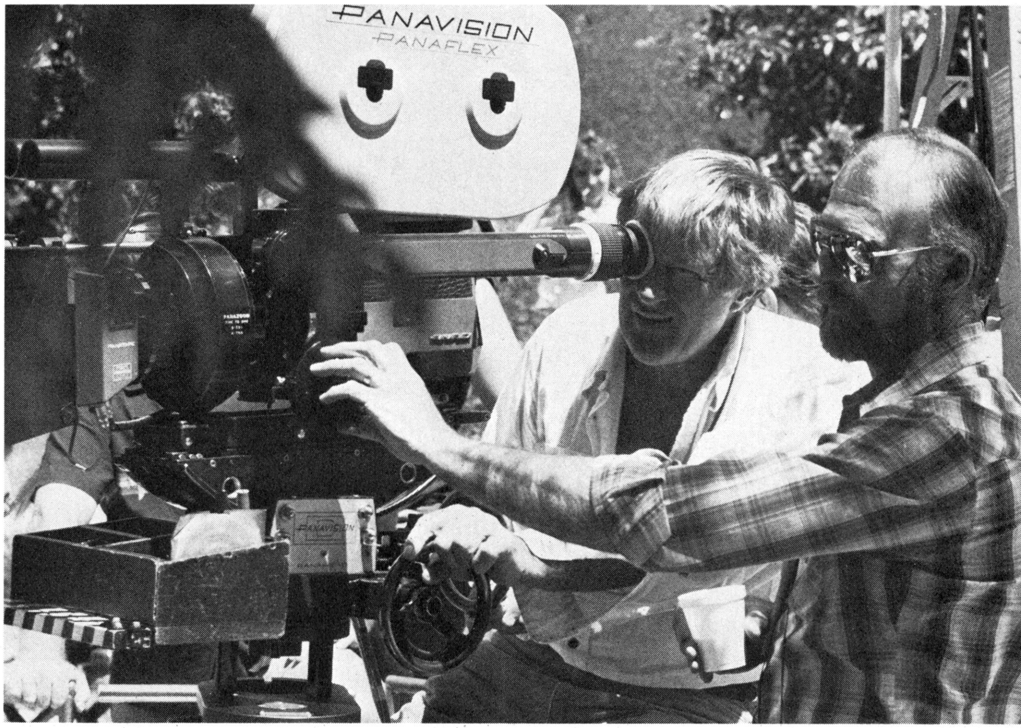
A Fine Mess is Stradling's fourth picture with Blake Edwards, and he finds the director easy to work with.

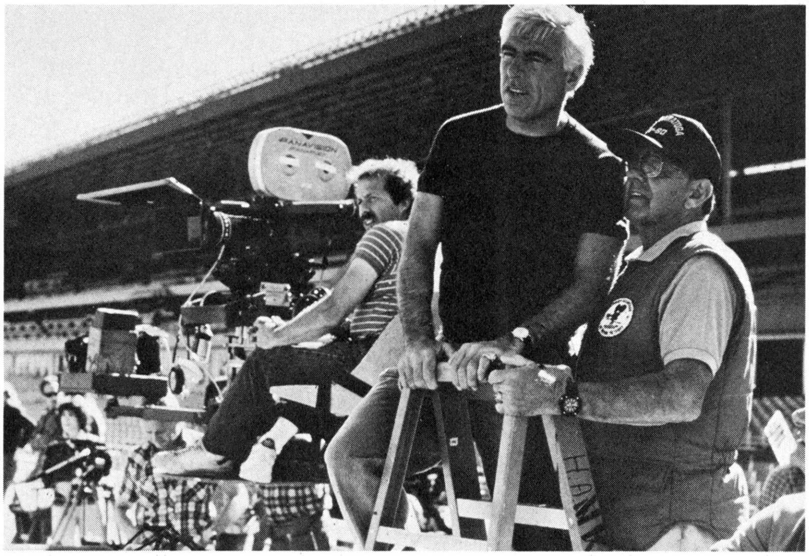
"I know what he wants," says Stradling. "He likes to pick the set-ups, he doesn't look for a lot of suggestions. He doesn't like a lot of close-ups, and likes to let scenes play without interruption, and for that reason he prefers to shoot anamorphic. So do I."

Unlike some who find the anamorphic, or "scope," format to be difficult to work in, Stradling finds only advantages in shooting 2.35:1. "There are more positive aspects than negative. Composition really isn't the problem some people have made it out to be. One big plus is that you're using the whole negative area, not cropping top and bottom, and you get a much better picture on the screen. And you don't have to protect the off-screen like you do in 1.85. Some cameramen will leave lights or flags in the off-screen area when they're shooting 1.85, reasoning that with the cropping in the theater it will never be seen – but if the projectionist doesn't frame the picture properly it can be a problem – and on TV it can look like amateur night unless the picture is blown up."

An element that characterizes Blake Edwards' work is speed, although that is a relative term. "Blake likes to work fast," continues Stradling, "Two or three takes tops – a lot of times there'll be only one. We spend so much time and effort lighting a set-up and it'll be over just like that. I sometimes wish he'd do it a couple of times just to justify the time we spend. Of course Ted Danson and Howie Mandel are TV stars, and they weren't used to the slower pace of features. They're used to doing 12 pages a day, and we were doing something like two or three pages a day, which is about average for a feature film shoot."

Another thing the stars had to get used to was Edwards' habit of only being on the set when needed. "He comes to the set to stage a scene, and then he goes away while we set up the lights. When everything's ready he comes back, rehearses, and shoots."





Stradling with his longtime assistant, Dick Meinardus(right).* Below: *Joe Dunne and Richard Kelley (right) set up for second unit chores.

Edwards' "phantom" presence on the set led to an amusing incident on the first day of shooting at Santa Anita Racetrack. Ted Danson came up to Harry with a question that was more properly in Edwards' domain.

"I guess he thought I was Blake," says Harry who does bear a certain resemblance to Edwards, "he'd only met him once. I told him he'd have to ask the director."

Danson did finally learn to tell the director from the director of photography, but he would often ask (with tongue in cheek), "Was he really here?" after a shot was in the can.

Although *A Fine Mess* was inspired by the film comedies of old, it does have a more contemporary setting. Still, some concessions had to be made. Howie Mandel plays a male car-hop in the film, but location manager Ron Quigley quickly found out that even though Los Angeles is famous for its drive-in restaurants, they seem to be a thing of the past – victims of high property values.

Production designer Rodger Maus and his crew set out to build the ultimate drive-in. The result was Dinkie's, built in four weeks for four nights' shooting.

"Of course, Ted and Howie are from TV," Stradling smiles, "and we had a little trouble communicating at first. There was one shot where I asked Howie Mandel to clear the arc – there was a hot spot. We did the shot again, and he did the same thing. I asked him again, and on the third take he was still moving into the hot spot, I said, 'Damn it, Howie, I told you to clear the arc, what are you doing?' And he looked at me sheepishly and said, 'I'm sorry, Harry, I don't know what an arc is.' We sometimes forget that we've got a language all our own, and there are times when a translator would be a big help. I finally explained what I was talking about, and he got it right away."

About half the film was shot on sound stages at the Laird International Studio in Culver City, but much of the action in *A Fine Mess* ranges over a number of Los Angeles locations. In addition to Santa Anita, scenes were shot in a downtown junkyard, a Beverly Hills mansion, and various sites in Westwood, Santa Monica, Venice, and Brentwood. The company also went to Monument Valley for a day. For Harry Stradling, Jr. this was a big plus.

"I like shooting on location," he says. "It's easier to shoot in the studio, you have more control. But locations often force you to do something more interesting than you might otherwise have done."

In expanding the elements of *The Music Box* – a three-reel short – into a feature length film, Edwards, who also wrote the screenplay, concocted a story about a dress extra (Danson) who overhears a plot by two petty hoods (played by Richard

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Mulligan and Stuart Margolin) to dope a horse. Danson persuades his buddy (Mandel) to draw out his life savings to play the sure thing. When all these elements are stirred in with a stolen car, an irate mobster, and the L.A.P.D. the mixture ends up in a "modern day Keystone Cops and villains chase."

Action like this called for an extensive second unit shooting schedule. Joe Dunne directed the second unit, and Richard Kelley, ASC headed the three camera crews needed on the 34-day second unit shoot.

Car chases, horse races, much of the film was staged in front of Kelley's lens, but Kelley prefers to ignore the limelight. "This was Harry's shoot, my job was to make everything we did match with his stuff. If Harry used spun glass in a scene and we were doing a tie-in, I'd use spun glass. It just wouldn't do me or Harry any credit if the second unit didn't match the principal photography. Communication is the key."

Kelley and Stradling would meet every morning at six in the screening room at M-G-M Laboratory to look at dailies and rough-cut footage. This was especially important because Blake Edwards does not generally look at the dailies, but prefers to view cut sequences on the weekend. He relies on his cinematographers to let him know if there are any technical problems, while he uses video monitors on the set to provide an instant on-screen appraisal of performances and "business."

During the extended chase sequence in *A Fine Mess* the characters played by Danson and Mandel find themselves in an auction gallery only to discover that they have inadvertently put in the winning bid on a piano (this element is borrowed from another Laurel and Hardy short, *Thicker Than Water,* in which the boys found themselves the owners of a grandfather clock).

"Of course, in the script Howie and Ted wound up having to deliver the piano to Paul Sorvino, who plays the mobster," says Tony Adams, "but during the making of the film, by the nature of the two actors and the way they worked together it became obvious that we were moving away from Laurel and Hardy. We had a new pair of comics, and they were different."

Like the comedy-makers of old, Edwards found that the film took on a life of its own, and that preconceived notions often give way to totally unexpected results in the execution. It was the ability to be flexible as their films began to take shape that made comedians like Laurel and Hardy great, and Blake Edwards found that the centerpiece of his film, indeed the very inspiration for it, was somehow out of place as the picture took shape.

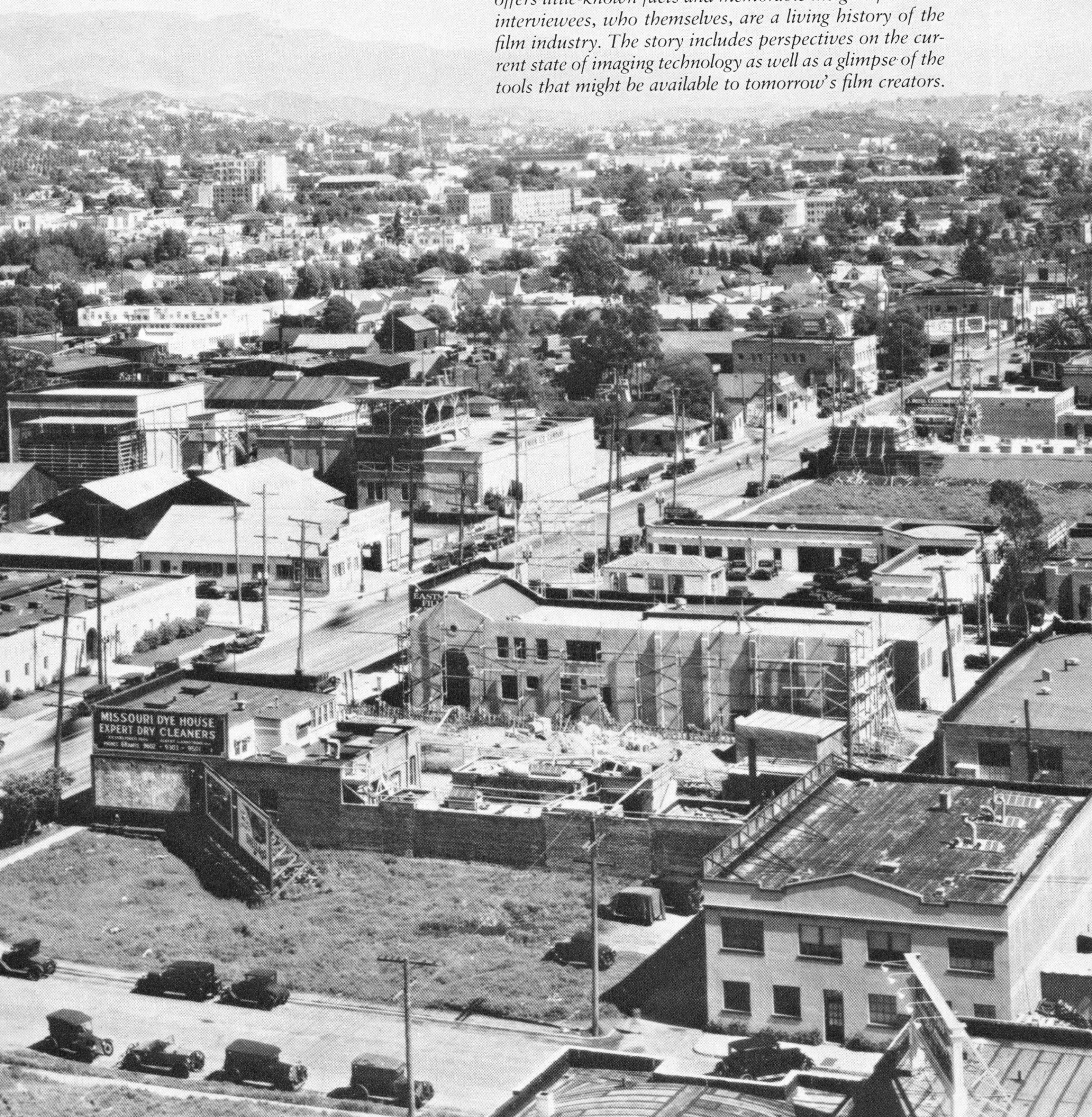
"After the picture was shot," says Adams, "we realized that the sequence where Ted and Howie hauled the piano up the stairs – which was the central idea of *The Music Box* – was one of the less strong elements of our film, and we realized that if we didn't equal or top the original we would open ourselves up for a great deal of criticism. So we cut it out, and it is a stronger film for it."

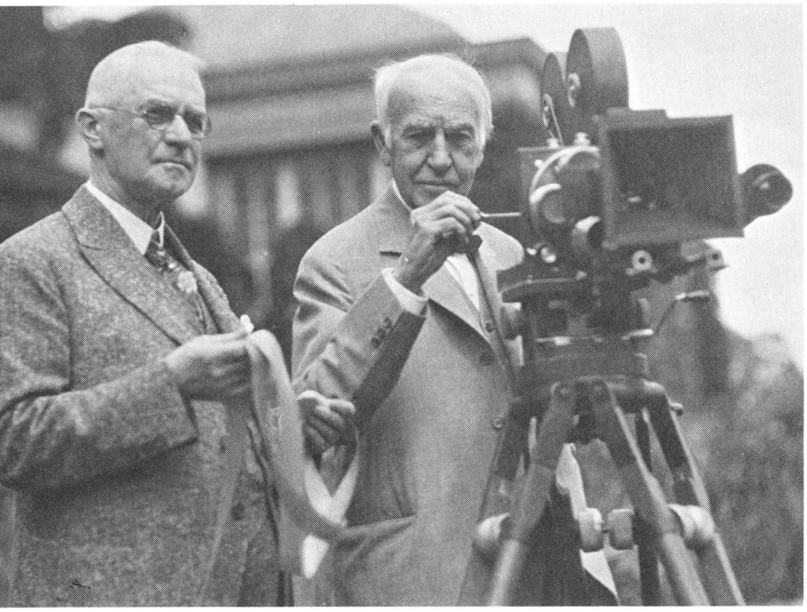
"I heard they cut that out of the picture," says Stradling with a shrug. "Well, that happens. You work like hell in this business, but its all for the picture. Everyone wants to get the best possible picture on the screen.

"I've been a director of photography since July 7, 1964. I remember the day well, and I tell people that ever since I've been a director of photography I've been tired, and nervous and I've had to pee. You're on the set all day long, and it's difficult to get away even for a quick trip to the honeywagon. But I've been around the business all my life, I like the people I work with, and projects like *A Fine Mess* keep it interesting and fun." △

reators of the Dream Machine

On June 24, 1986, Eastman Kodak Company dedicated its new Hollywood Marketing and Technology Center at 6700 Santa Monica Boulevard – at the same address it had serviced the west coast needs of the film industry for more than 60 years. To help commemorate the event, the company commissioned west coast film industry writer Robert A. Fisher to document the histories of Kodak and the Hollywood motion picture industry. Research was accomplished largely through interviews with members of the American Society of Cinematographers over a period of several years. The writer offers little-known facts and memorable insights from the interviewees, who themselves, are a living history of the film industry. The story includes perspectives on the current state of imaging technology as well as a glimpse of the tools that might be available to tomorrow's film creators.





Eastman holding film; Edison cranking camera.

Opposite Page:

Rudolph Berquist with Phil Rosen (kneeling). Rosen was first president of A.S.C.

Previous page: *View of Santa Monica Blvd. looking east in 1924. The Kodak Marketing and Technology Center stands on the site of the Missouri Dye House, the vacant lot and the two buildings to the east. The building under construction became the headquarters for the Hollywood office in 1927. The lobby was retained as the reception area of the new center.*

In Search of Light and Shadows

Man's fascination with light and shadows has its roots in antiquity. Aristotle, in his writings, described how sunlight passing through a small hole projects an image on the wall of a darkened room. That's not a bad definition of the camera obscura.

During the 1500s, alchemists in Europe, seeking image-preservation materials, experimented with the concept of exposing silver compounds to light which turned them black. During the 1700s, there was a proliferation of inventions that used the camera obscura and similar devices as a means of capturing and projecting images.

However, the artistry of these innovators might as well have been written on the wind, as there was no way to preserve the images that they created. That distinction belonged to Joseph-Nicephore Niepce, a French lithographer, who in 1827, became the first person to record and fix a latent image on sensitized material.

Two years later, William Henry Fox-Talbot, an Englishman, publicly announced his invention of photography along with the processes that he used to capture and fix images. Talbot invented a practical negative-positive photographic process that greatly reduced exposure times and established the efficacy of the latent image.

L.J.M. Daguerre, another Frenchman, was a well-known scenic painter during the early nineteenth century. Daguerre used the camera obscura to paint images with light on polished metal plates coated with a light-sensitive chemical. It was an expensive and cumbersome process, but it produced wonderfully sharp and detailed images.

The quest for a better way to record images continued, though it was certainly not an enterprise for the lazy, dull or impatient. Early practitioners were required to master the physics of optics; they needed a flair for design and carpentry, as they certainly had to build their own camera; a fine sense of the art of painting with light was a must; and, at the least, they had to be serious dabblers in chemistry, as the following commentary suggests:

"Dip the paper in a weak solution of sodium chloride; when it is completely dry, brush the paper with silver nitrate dissolved in six times its weight of water. With the paper almost dry and protected from all action of light, expose it to the fumes of iodine, then to an image in the camera obscura, then to mercury . . . and finish by washing in a solution of hyposulfite."

That was an 1839 recipe for recording and preserving one photographic image. The writer, a Frenchman named Hippolyte Bayard, reported that the process took him 18 minutes to complete.

"That's it! Now, work like hell!"

For practical purposes, modern photography started in 1871, when Richard Leach Maddox, an Englishman, invented the gelatin silver halide crystal emulsion. Even today, the silver halide crystal has no peer as an efficient receptacle for capturing and storing light.

George Eastman and the Moving Image

In 1877, George Eastman was a 23-year-old bank clerk, living in Rochester, New York, with his widowed mother and two younger sisters. The young man was his family's main source of support. He had been working for eight years.

Now he was planning for a well-deserved vacation, and a friend suggested that he bring along a photographic outfit so he could record what he saw. The camera that he bought was heavy and cumbersome, and it required a sturdy tripod to hold it steady. In those days photography was done with wet plates. The photographer needed a pitch black area, where he could spread the emulsion on a glass plate. The image had to be exposed before the emulsion dried.

Eastman became enthralled with photography. When he read in British magazines that photographers were making their own gelatin emulsions, which retained their sensitivity to light after they were dried, Eastman began experimenting, working at his mother's kitchen table long hours after his job at the bank.

In April, 1880, Eastman leased the third floor of a building in Rochester and started manufacturing dry plates to sell. On the first day of 1881, he organized the Eastman Dry Plate Company, along with local businessman Henry A. Strong. However, Eastman retained his clerical job at the bank until near the end of the year.

Cameraman Jackson Rose (at right) on set of Essanay Studios, 1912.* Below: *The legendary "Billy" Bitzer with D.W. Griffith.

Eastman's goal was to simplify photography. He continued his search for a lighter and more flexible support base than glass. The company had some successes in developing paper bases; however, the grain of the paper tended to reproduce on the photographic print.

Finally, in 1889, Eastman perfected the first transparent roll film. It was made by spreading a solution of nitrocellulose on a glass table 200 feet long and 42 inches wide. When the film dried, it was coated with a thin light-sensitive gelatin emulsion.

The film base was transparent and grainless. It provided support for the negative that could be produced in 200 foot long strips. One of the first customers for this new film was Thomas A. Edison. When the film reached him, Edison is reported to have exclaimed: "That's it! Now work like hell!"

Two years later, at Orange, New Jersey, Edison unveiled the first motion picture camera, which he called the Kinetograph.

There are many stories about the relationship between Eastman and Edison, and how the meeting of these two unique individuals provided the spark needed to ignite the birth of the motion picture industry.

One such story is about how they came to the decision to make motion picture film $1\frac{3}{8}$ inches (35 mm) wide.

Eastman supposedly asked Edison how wide he wanted the film for his new camera to be. Reportedly, Edison held the thumb and forefinger of his right hand a little more than an inch apart, and said, "About so wide."

One observation about George Eastman is appropriate here, because it says something significant about the entire motion picture industry.

"Mr. Eastman described himself as 'an amateur photographer.' His characterization which is the most significant is the word 'amateur!' Occasionally some writer, forgetting the history of his subject, writes disparagingly about 'amateur scientists.' Presumably the critic thinks that the word amateur is synonymous with 'beginner' instead of meaning, as it does, one who does things for the love of doing them. Men do things for many reasons: to earn their bread, to obtain riches and luxury, to attain power, for the approval of their fellows: but the things that are done best are done for the love of doing."

That observation was made by Dr. C.E. Kenneth Mees, a British scientist who was already prominent in the photographic field when Eastman hired him to organize and head a research laboratory in Rochester in 1912. This was one of the first formal research laboratories in the history of American industry, and Dr. Mees headed it until 1955.

The Early Days of the Cinema

The early days of the moving image were nearly lost to history and might have been but for the dedicated efforts of a very few individuals. There was no copyright protection for moving images prior to 1912. However, there was a copyright law which protected paper prints. Therefore, Edison and other pioneer moviemakers resorted to making paper prints of their films and sending them to the Library of Congress.

By the early 1950s, the paper prints were a fading, nearly forgotten memento of the

Mack Sennett (straw hat), Hans Koenekamp (cranking camera) on set of 1913 Sennett comedy.

past. One of the dedicated individuals who worked to preserve that heritage is Kemp Niver, a one-time studio security officer, who earned an Oscar in 1954 for the work that he did to restore movies made between 1894 and 1912.

At one time the Library of Congress had some 5,000 motion pictures stored on paper. Niver was able to restore and preserve some 3,000 of these. Niver was quoted as saying some years ago, "If I give myself credit for anything, it is for recognizing the importance of this collection of motion pictures. They are the history of the beginning of movement in photography. It was the start of a new form of communications, a transition from the spoken word to visual literacy."

W.G. ("Billy") Bitzer and Edwin S. Porter

W. G. "Billy" Bitzer and Edwin S. Porter were notable for their pioneering of photographic techniques. Porter joined the Edison Company around the turn of the century. Before that, he installed Kinetoscopes and projectors, and occasionally sold event films to Edison.

As movies turned from documenting events to telling stories ("The Great Train Robbery," which he photographed in 1903, is regarded as the first such production), Porter played a key role in the evolution of techniques which distinguished the cinema from the live theater. He was among the first to move the camera to change the audience's point-of-view and to intercut parallel scenes. He used double exposures and matte shots, and combined live-action footage with projected backgrounds.

Bitzer was an electrician, who started shooting event films during the last decade of the nineteenth century. In 1908 he teamed up with D.W. Griffith, an ordinary actor who was about to become an extraordinary director. Bitzer is generally recognized for perfecting, if not innovating, such camera techniques as the close-up, soft focus, the fade-out and backlighting.

In 1913, he made a mechanical improvement in his personal camera by installing an iris diaphragm, which could block all light from reaching the film. This allowed Bitzer to go to black between scenes. He first used this technique during the filming of "The Battle at Elder Gulch." Bitzer also used the iris to focus attention on actions occurring at some distance from the camera.

He worked with Griffith for 16 years, making such films as "The Birth of a Nation," "Intolerance" and "Broken Blossoms."

The Evolution of Motion Picture Films

Two developments were essential for the continuation of progress in the infant motion picture industry. In 1896, the Eastman Company produced the first print stock designed for projection. Up until then, the same film stock was used as both a camera negative and release print material.

Karl Brown, pioneer cameraman, writer and director.

Then, in 1899, a young chemical engineer named Frank Lovejoy directed the development of a process which allowed the company to manufacture film in lengths up to 1,000 feet. The 1,000-foot roll became the standard for the motion picture industry. Lovejoy was named president of Kodak in 1934, and chairman of the board from 1941 until 1945.

Sharing Memories of Arthur Miller, ASC

The year was 1906, and Arthur Miller was a teenager in New York. He brought a roll of film from a Brownie No.1 camera into a shop to be developed. A neighbor was in the store, and he asked Miller if he wanted to learn how to develop film himself.

Writing in the January 1963 issue of International Photographer Magazine, Miller said: "I'll never forget the thrill of seeing the image slowly coming up on the film in the light of that ruby red lamp."

For several years, Miller and his brother William, took photographs of teamsters standing proudly by their ornate beer wagons and horses, and sold them three for 15 cents.

In 1908, he got a job with the Crescent Film Company, working for Fred Balshofer, who was both cameraman and president. The following year, Balshofer organized the New York Motion Picture Company and Miller, still in his teens, became a full-fledged cameraman. This was a period when most cinematographers owned their own cameras and handcranking was an art.

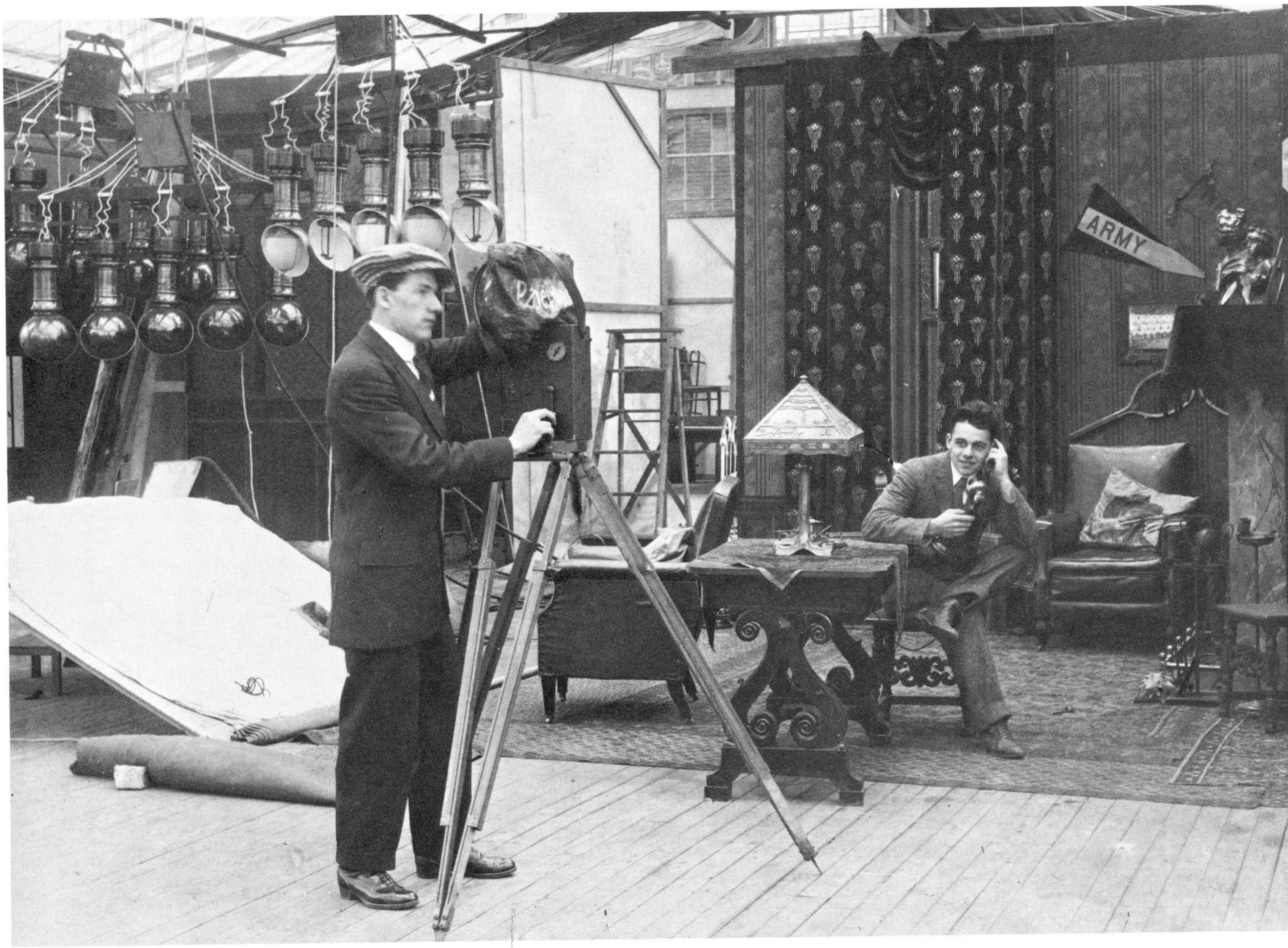
"When they were ready to shoot the insert, you found the right roll, loaded the magazine, threaded the camera and located the pinholes. Then you counted cranks for the cameraman . . ."

"Most cinematographers relied on the dependable Pathé Professional Camera up to 1920," Miller remembered. "This camera was gradually obsoleted by the ball-bearing precision of the Bell & Howell camera (which was easier to crank and featured an ingenious shuttle which took the pressure off the aperture plate when the film was in motion, resulting in a rock-steady picture). Then, by 1922 or 1923, the Mitchell Company developed a camera with a rack-over which allowed the cameraman a last quick look before shooting. By 1925, this camera had completely captured the market."

In all, Miller shot more than 150 feature films in his career, which ended when he retired in 1950. Miller earned seven Academy Award nominations for cinematography and won Oscars for "Anna and the King of Siam," "The Song of Bernadette" and "How Green Was My Valley."

When 'X-Back' Saved the Day

Around the time that Arthur Miller started his career, a crisis was building. Processed negatives were coming out of labs with random patches of hot spots. Kodak scientists helped to track down the problem. When the base side of the film passed the aperture, or other metal parts in a camera, it caused friction. This created static electricity, resulting in blue sparks that exposed small areas on the film. Unwinding film in a magazine, particularly in a cold, dry climate could cause the same problem. In 1914, Kodak invented X-Back, a coating applied to



Arthur Miller with camera working at Pathé Studios in New York, 1913.

the base side of the film. This anti-static coating eliminated the problem.

The American Society of Cinematographers

The Cinema Camera Club of New York and the Static Camera Club of America, in Hollywood, were both organized in 1913. Members were many of the day's leading cinematographers, who met in homes to share ideas and discuss experiences. On December 21, 1918, members from both of these organizations met in Los Angeles at the home of William C. Foster for the purpose of organizing the American Society of Cinematographers. The organization was chartered on January 8, 1919.

Phil Rosen was the first president. Other charter members were Arthur Edeson, Charles Rosher, Victor Milner, Joe August, Foster, Eugene Gaudio, Del Clawson, Robert Newhard, Walter Griffin, Homer Scott, Dev Jennings, Roy Klaffki, Fred Granville and Guy Wilky.

In August 1977, the organization published an "outline of facts," written for new members by Stanley Cortez, ASC. Under the heading of "purpose," Cortez wrote: "To advance the art of cinematography through artistry and technological progress . . . to exchange ideas . . . to cement a closer relationship among cinematographers and associate members . . . to help perpetuate what has become the most important medium the world has known . . . ."

Karl Brown Brings History into Focus

"I was born in Pennsylvania in 1897. My mother and stepfather were in show business, light opera; so I grew up backstage."

In 1912, Brown's parents went to work for the Kinemacolor Company in Whitestone, Long Island. The company had come from England for the purpose of producing and distributing color movies.

Kinemacolor was based upon a camera that used alternating shutters to expose 32 frames per second, instead of the standard 16, through green and red filters.

The studio and laboratory were in an old dancehall. "I was standing around one day, when the boss said, 'Hey kid, do you want a job?'" That was the beginning.

Brown mopped floors in the laboratory. Pretty soon he advanced to processing the film. His pay was $3 a week. "We used Eastman orthochromatic film, and then added our own dyes to make it sensitive to red and green light. The film was processed in 200-foot reels. The lab manager would cut a strip off of each reel, and eye it. Then, he would tell me precisely how long each reel needed to be processed."

When the lab manager was fired, Brown was given his job. "Kinemacolor had trouble finding theaters for its films. One of the problems was that motion picture exhibitors were still thinking in terms of vaudeville. They couldn't conceive that people would pay to sit through a long film. They wanted five or six short features, like vaudeville acts."

Set of* Poor Little Rich Girl*, Paragon Studios, Ft. Lee, NJ, 1916. From left, Maurice Tourneur, director; Lucien Andriot, first cameraman; John Van den Brouk, second cameraman; and Mary Pickford.

That was a problem for Kinemacolor because a special projector that ran two times normal speed was required to show the company's films. Exhibitors weren't willing to pay to have a second projector.

Finally, the company found a theater on Ninth and Main Streets, in Los Angeles. Kinemacolor moved to Hollywood, taking over the Harry Revier lot on the corner of Hollywood and Sunset Boulevards. However, the company went broke within a few months.

Films of the Times

In 1916, Kodak introduced Cine negative film, type E. The following year, Cine negative film, type F became available for the exclusive use of the motion picture industry. Five years later, Super-Speed Cine negative film came to the marketplace. All of these emulsions had one thing in common. They were orthochromatic films and were sensitive only to blue or violet light. If an object didn't reflect blue or violet light, the film recorded it as black.

Makeup, lighting, sets and lab work were all geared to the use of orthochromatic film. Kodak Research Laboratories, under Dr. Mees, searched for a solution, a black-and-white film that could see all colors of the rainbow and reproduce each with a gray that was about equal in brightness to the color.

George Folsey, ASC, Tells Us How It Was

It was 1914. George Folsey had just graduated from grammar school, and he needed a job. By chance an agency sent him to Famous Players Studios, on 26th St. in New York. "The first time that I saw them shoot a movie, I was hooked," he remembers.

"I earned $6 a week for two years," he says. "Then, one day I went up to Edwin Porter, who was a partner in the company, and told him that, and he raised my salary to $8 a week."

There were no camera assistants in those days. The cameraman loaded his own magazines, and in most cases, he was responsible for processing the film. In addition, most cameramen took still photos for publicity and advertising purposes. Folsey remembers that Porter was one of the first New York cameramen to hire an assistant to load his magazines and to keep track of double exposures.

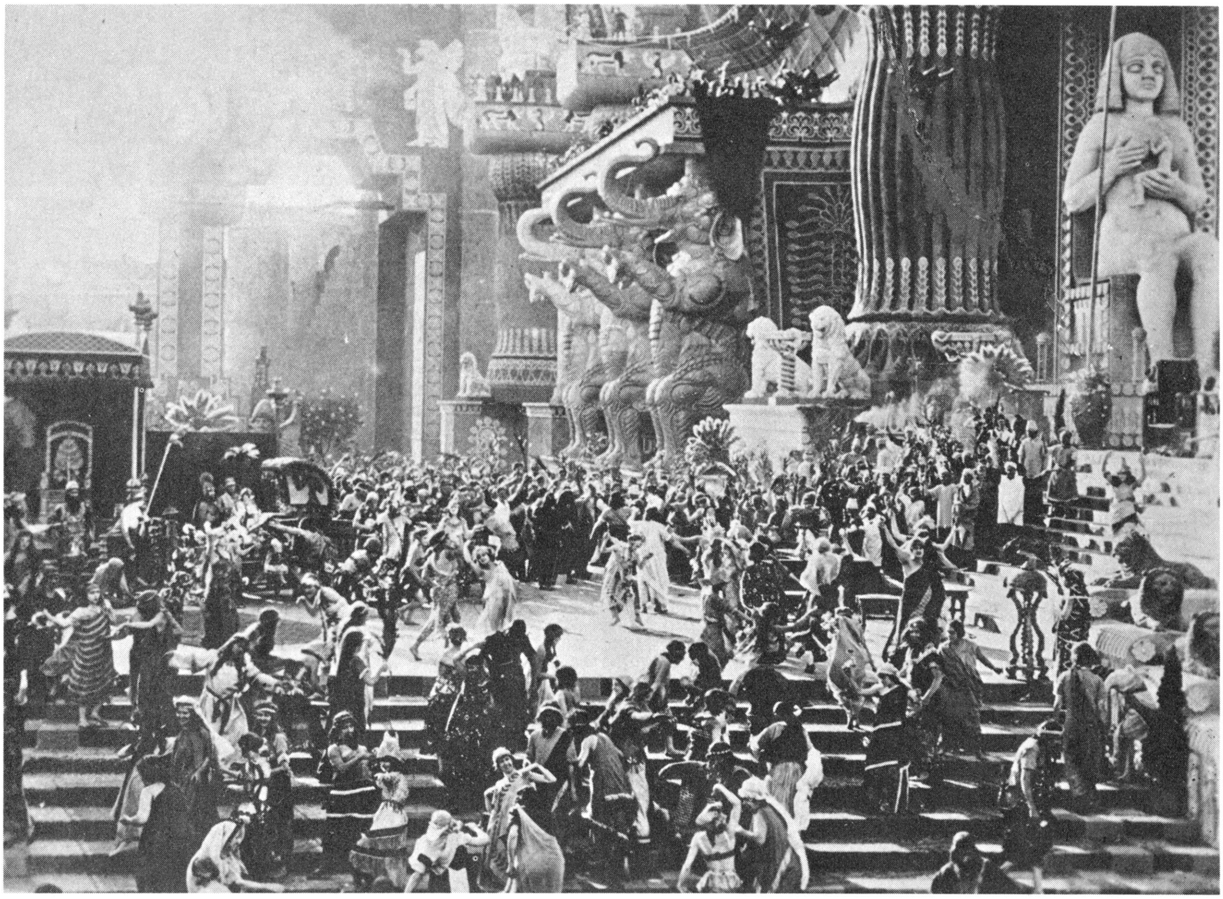
That got other cameramen interested in having assistants. Folsey went to work with Lyman Broening.

Part of the assistant's job was to help make fades and dissolves in the camera. "When a director wanted a fade-in, you had to mark the film so you could find that specific frame later on. You did that by making three pinholes between the perforations of three consecutive frames. You also removed the lens, and marked the frame line right on the film with a pencil. It had to be very precise."

Then, the cameraman closed the shutter, and the assistant would count the cranks, so he knew exactly how much unexposed footage there was. Folsey was also responsible for keeping very accurate records since sometimes the insert wasn't shot until months later.

"When they were ready to shoot the insert, you found the right roll, loaded the maga-

Scene from Intolerance (1916)



zine, threaded the camera and located the pinholes. Then you counted cranks for the cameraman. I had a lot of other responsibilities, too. Most nights, I got home at 9, 10 or 11 o'clock. I was 16 years old, and I was earning $10 a week."

After some three years, Folsey became a second cameraman. "I'll tell you where that title comes from," Folsey says. "The second cameraman used to shoot a second negative for overseas release. You would shoot side-by-side with the first cameraman."

It was 1919, and Folsey was scheduled to shoot second camera for a feature film starring Alice Brady, called "Her Bridal Night." The first cameraman, a Frenchman, got homesick and quit just before production started. The director, Kenneth Webb, asked Folsey, "Can you shoot this film?"

It was a complicated picture because the actress played two parts, sisters, and she was often on stage with herself, calling for many very complex split screen exposures. "She (Brady) thought that I was too young," Folsey recalls. "I heard her tell the director, 'we'll try it for a couple of days, and if it doesn't work out, we'll replace him.'

"I had a tremendous break. She was crazy in love with the leading man. How can you photograph a woman badly who is in love? On the third or fourth day, she offered me a contract to do all of her pictures. That was a tremendous boost to my confidence."

That was the beginning. He was 19. Folsey worked in New York and Hollywood through the 1920s, and finally moved to the West Coast for good in 1932. He was active as a director of photography for 44 years, 27 of which were with M-G-M Studios. He was nominated by his peers for 13 Academy Awards.

". . . to help perpetuate what has become the most important medium the world has known."

D.W. Griffith Comes to Hollywood

In 1914, D.W. Griffith moved to Hollywood and occupied the old Kinemacolor lot. Karl Brown at age 16 was hired as Billy Bitzer's assistant.

"Griffith had a way of needling people. He liked to keep everyone who worked for him on edge; even Billy Bitzer. So, the moment that I showed an interest in being a cameraman, Griffith practically adopted me. He praised everything that I did in front of Bitzer.

"Of course, I couldn't compete with Bitzer. He was a marvelous cameraman; maybe the best of his time. He was in his thirties, earning $300 a week. I was carrying his cameras, and making $6 a week."

In 1916, Griffith put Brown in charge of producing special effects. He created a guided missile attack on a city in "The Flying Torpedo," shot miniatures in "Broken Blossoms," and created a mystic illusion by double-printing in "Intolerance."

When Griffith returned to New York in 1920, Brown stayed in Hollywood with the Lasky Studio, which soon became Paramount. During the next half dozen years, he shot some 30 features while continuing his special film effects work. "The Covered Wagon," a Western epic that Brown shot in 1923 at locations in Nevada and Utah, is still regarded as a classic.

"There were no film speeds in those days. When you started a picture, you would get an emulsion number, and that was yours. You made every conceivable test, over- and under-exposures weeks before production started. After you did that, you knew that emulsion. Every major studio had its own lab."

In 1926, Brown directed a movie called "Stark Love." He never shot another film, though he wrote many scripts and continued directing for many years.

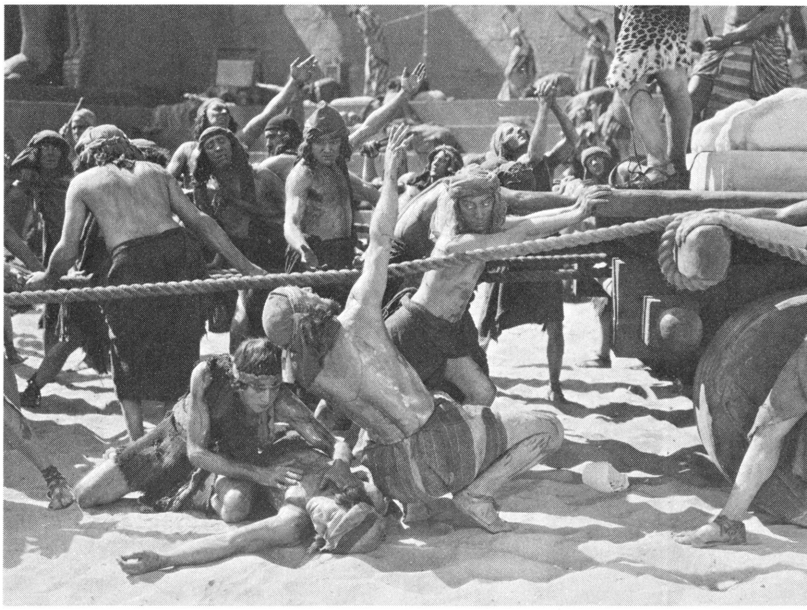
Making Movies in Color

Almost from the start, moviemakers recognized that color could enhance the film experience. At the turn of the century, tinting was a fairly popular technique. Tinting was done by hand-painting selected scenes on individual prints. Advertisements in trade magazines for motion picture exhibitors often listed separate prices for color and black-and-white prints.

By the early 1920s, the use of tinted base was in vogue. Usually, tinted bases were used to emphasize emotions in selected scenes. For example, in "Greed," director Erich von Stroheim chose a green film base in selected scenes to convey an overwhelming feeling of envy and greed.

In 1929, Eastman offered an array of 17 Sonochrome tinted film bases. However, that was just one of various paths explored during this period. Kinemacolor was short-lived. However, Technicolor, a process devised by Dr. Herbert T. Kalmus, took hold and captured the public's fancy. The first full-length Technicolor movie, "Toll of the Sea," starring Anna May Wong, was released in 1922.

Initially, this was a two-color process, red and green. Two rolls of black-and-white film were simultaneously exposed, each recording a different color of light. Later, at Technicolor Labs, the original negatives were copied onto two specially dyed dupes that were used to make a composite print.



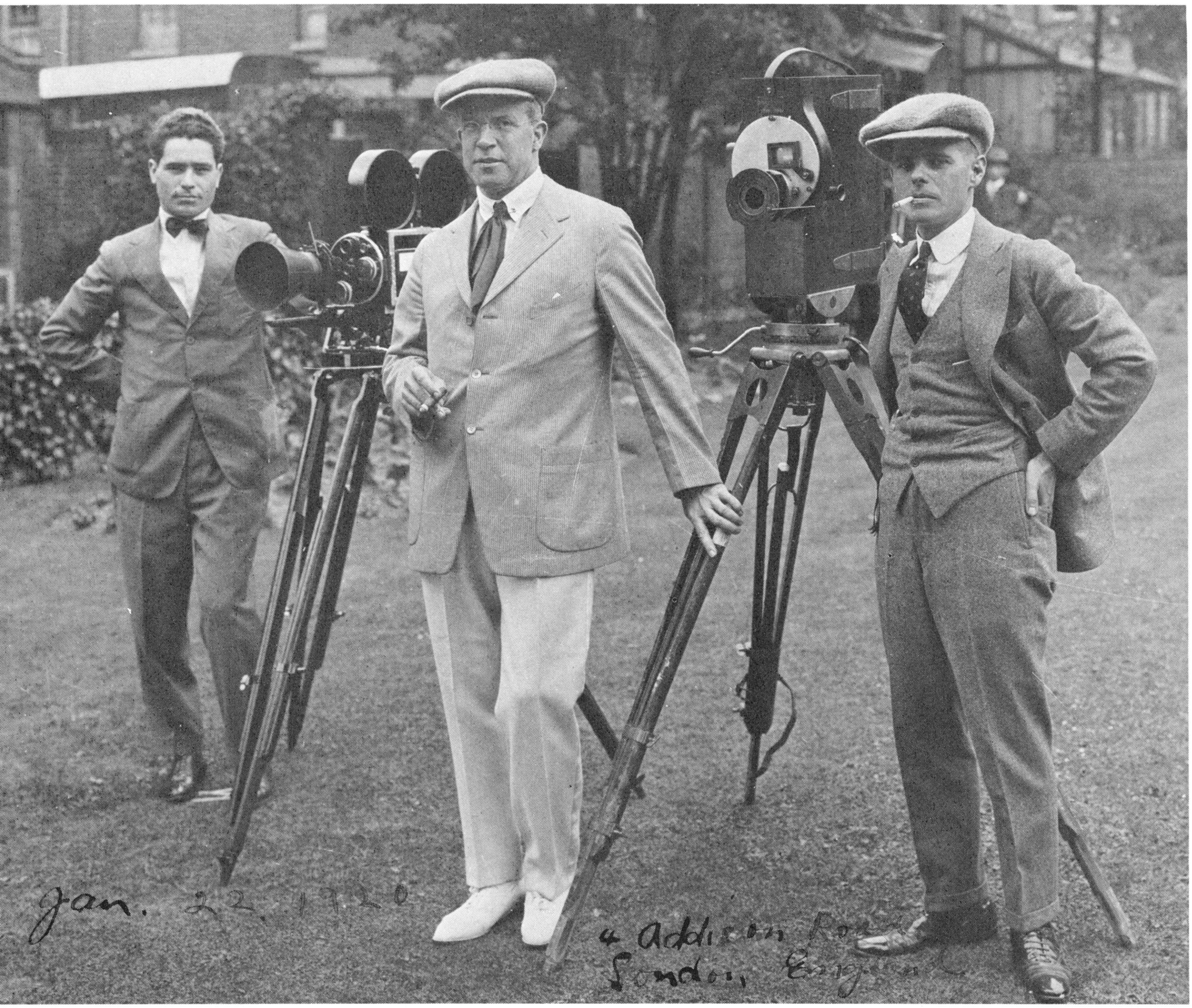
Scenes from **The Ten Commandments** *(1923), above, and from* **Phantom of the Opera** *(1925), included Technicolor inserts.*

During the 1920s, through the mid-'30s, many features, including "Ben Hur," "The Ten Commandments," "The Merry Widow" and "Phantom of the Opera" used Technicolor inserts. This became a very specialized field of cinematography. Generally, when Technicolor was used, the company would send a photographic consultant, who shot the scenes with his own crew.

For some 40 years of Technicolor history that consultant usually was Ray Rennahan, ASC, who went on to become one of Hollywood's finest cinematographers.

Joe LaShelle, ASC, Talks About Getting Started

"I grew up in the Los Angeles area, and after high school I was planning to go to Stanford



From left, Nicholas Musuraca, J.S. Blackton and William T. Crespinel, in 1920 on location in England.

University to study electrical engineering. During the summer vacation, I heard that a film laboratory on the Paramount lot needed someone to work on the night shift. They put me in the printing department, working days instead. When the summer was up, I stayed."

That was 1920. Five or six years later, Joe LaShelle was supervisor of the printing department. "Charlie Clarke was going to Alaska to shoot a film and said that I could come as his second cameraman, if I bought a camera and lenses to match his. That's how I got started in cinematography."

The lab manager tried to talk LaShelle out of it, pointing out that assistant cameramen were only paid $25 a week. "He told me that I would do a lot better staying in the lab," says LaShelle. "But I went anyhow."

In 1931, LaShelle joined Arthur Miller's crew as an operator and stayed with him for 13 years, at 20th Century Fox. "I loved it because I was learning all of the time," he says. "(Darryl) Zanuck gave him all of the great black-and-white pictures. I did 'Tobacco Road,' 'How Green Was My Valley' and 'The Song of Bernadette' with Artie – all great films."

LaShelle became a director of photography in 1944. He was nominated for nine Oscars, winning for "Laura."

Growing Demand for American Films

By the mid-1920s, the worldwide demand for Hollywood films was moving into high gear. In 1926, Eastman introduced the first high quality duplicate negative film. This made it possible to send duplicate negatives to foreign countries for making release prints that usually included subtitles in the language of the host country. That ended the need for a second cameraman. However, it also meant that overseas audiences were getting to see the work of the director of photography.

Getting Ready for the 'Talkies'

"The Jazz Singer" took the country by storm. It changed everything. It changed the movie industry forever. The year was 1927. The "talkies" were here. At first, it was reasonably simple. Sound was recorded on wax records that were synchronized to the images. Initially, this was done by connecting the camera to the sound recorder with a cable. Everything was fine as long as the records weren't broken or out of order. However, that was asking a lot. RCA and the Western Electric Company soon perfected ways to record sound as visual patterns along a narrow track – the sound track – near the edge of the film. The first Eastman film made for this process became available in 1929.

Eastman Kodak Company Comes to Hollywood

Around 1920, J.E. Brulatour, Inc. established a branch office in Hollywood for the purpose of selling and distributing Eastman motion picture films. Later, this organization became W.J. German, Inc. Most of the people who worked for Jules Brulatour and later for Bill German had close ties to the motion picture industry. Edward O. Blackburn, who headed the Hollywood sales office from 1926 through the early 1960s, became the third honorary member of ASC in 1933, preceded only by George Eastman and Thomas Edison.

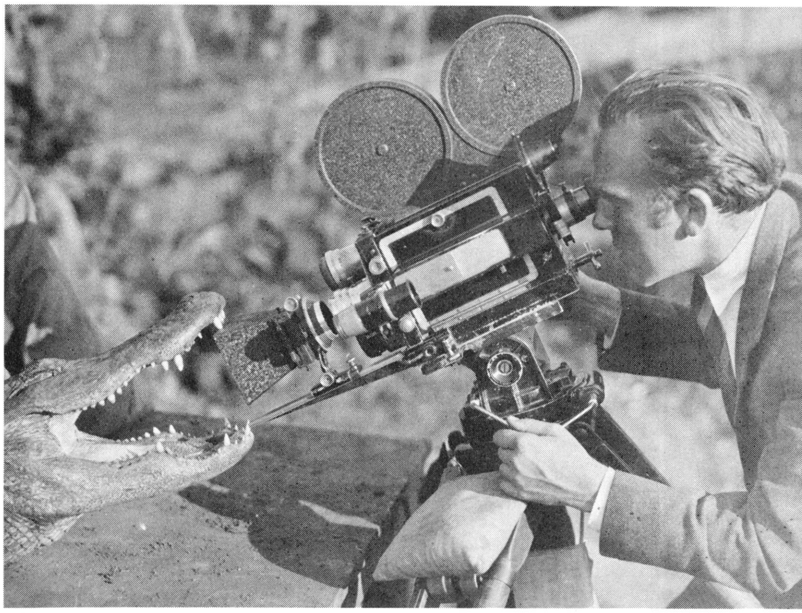
As early as 1912, Kodak assigned specialists to work directly with studios and laboratories. They provided technical liaison with Kodak Research Laboratories and the factory at "Kodak Park," in Rochester. However, the rapid acceptance of sound-on-film required precise specifications for processing and printing films.

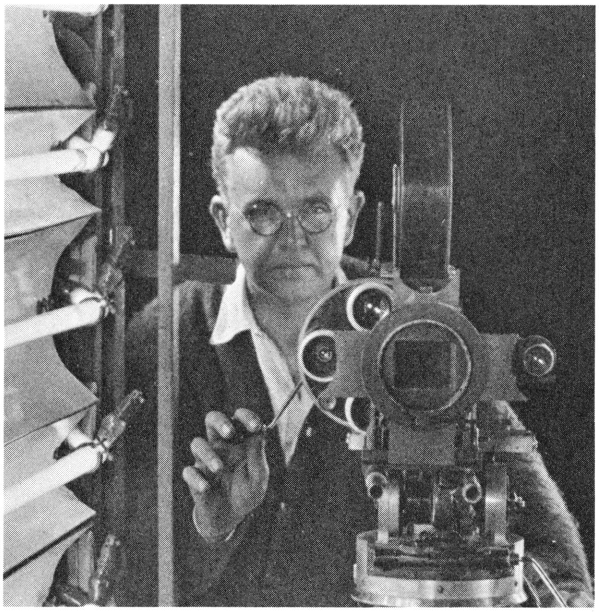
In 1927, Kodak purchased the building at 6706 Santa Monica Boulevard in Hollywood. The staff assigned to that facility was given the mission of providing free engineering services to the studios and laboratories making the transition to sound-on-film.

T.E. "Ted" Curtis, manager of the Motion Picture Film Department, in Rochester, handpicked the technical staff. He chose Emery Huse, from Kodak Park, to head the operation and named Perry Connor, Gordon Chambers and William Barry as assistants.

The First Academy Awards

The first Academy Awards ceremony was held in 1928 for pictures released during the previous year. Nominees for cinematography were George Barnes, ASC, for "The Devil Dancer," "Magic Flame" and "Sadie Thompson;" Charlie Rosher, ASC, for "My Best Gal" and "The Tempest;" and Karl Struss, ASC, for "Drums of Love." Struss and Rosher also were co-nominees for "Sunrise," which won the first Oscar for cinematography.

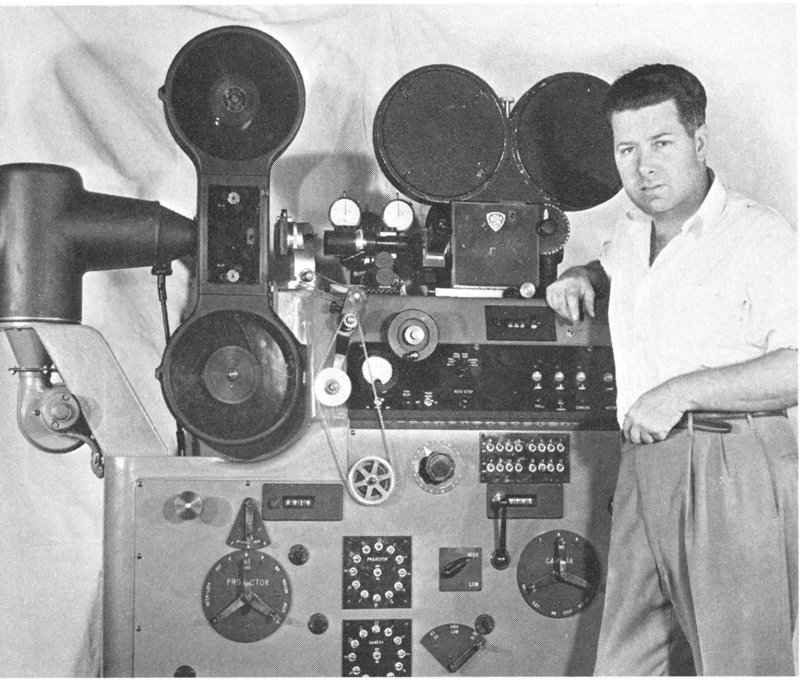




Charles Rosher photographs a toothy villain in **Sparrows** *(1926). Karl Struss,* **below,** *in 1923.*

Kodak Wins Its First Oscar

In 1931, Kodak won its first technical Academy Award for the development of Super Sensitive Cine negative panchromatic film. This was a comparatively "fast" film balanced for use with incandescent lighting.



Linwood Dunn and the Acme-Dunn Optical Printer. Behind the camera* (below) *is Charles Lang. Director is Frank Borzage with Helen Hayes in* A Farewell to Arms *(1932).

The 'Sound House' or 'Ice Box'

Many people believed that cinematography had peaked as an art around 1928. There was certainly no shortage of "great" cameramen. In addition to those already mentioned, the list included John Seitz, ASC; Ernest Palmer, ASC; Clyde DeVinna, ASC; William Daniels, ASC; Harry Perry, ASC; Joseph Rucker, ASC; Willard Van der Veer, ASC; Edward Cronjager, ASC; Barney McGill, ASC; Lee Garmes, ASC; Floyd Crosby, ASC; Ray June, ASC; Gregg Toland, ASC; and Hal Mohr, ASC; to name just those who were earning Academy Award nominations from their peers during that period.

However, they all had to contend with "the sound house," or as some called it, "the ice box." This was a sound-proof stationary booth designed to muffle camera noise. Images were recorded through a glass window.

Some cinematographers put a sound house on wheels, so the camera could be moved more easily. Arthur Edeson was working at Fox Studios at the time, and he had a reputation for never working in a sound house. Instead, Edeson had a mechanic at Mitchell camera replace some of the nosier parts, and then he used a big padded bag, called a "barney," to muffle the remaining sound. That's the way that he shot "All Quiet on the Western Front," in 1930. After that, the sound house was on the way toward becoming a relic.

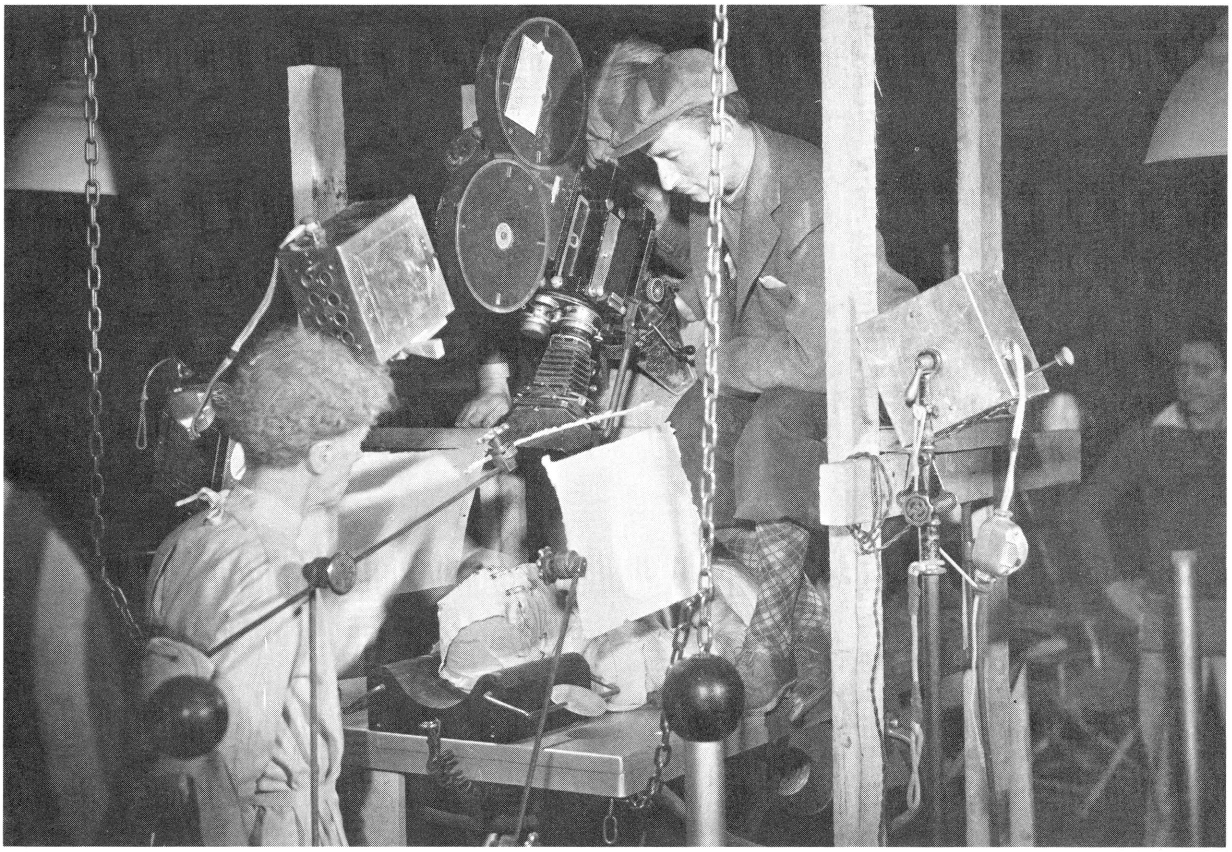
Linwood Dunn, ASC, and the Art of Illusions

Linwood Dunn, ASC, was playing a jazz sax at a resort in the Catskills, when his uncle Spencer Gordon Bennet, hired him as an assistant cameraman on a serial produced by Pathé in New York – "The Green Archer." That was in 1925. Dunn moved to California with the production company the following year.

Dunn stayed with Pathé Revue until the company went out of business in 1929. During that period, he helped to shoot 10 serials. At the end, he was director of photography for "Queen of the Northwoods," the last production made by the company.

During the fall of 1930, Dunn was hired for a few days to work as a camera assistant in the new photographic effects department at RKO Radio Pictures, Inc. He stayed for 28 years, eventually becoming head of the optical and film effects departments until the studio closed in 1956.

The first optical printer used by RKO was a Mitchell camera on a lathe bed, facing a projector. The first matte shot that Dunn worked on was for a picture called "Ringside." The painting was used to create a crowd at a boxing match. There were some people moving around in the seats while the fight was filmed. Others were painted in on the matte, which was then double-exposed with the fight footage.



John Mescall, wearing plus-fours, photographs the unveiling of the Bride of Frankenstein *(1935).*

"King Kong," "Mighty Joe Young,""The Hunchbackof Notre Dame," "Citizen Kane" and "The Thing" were among the 1,000-plus feature films that Dunn worked on at RKO.

Charles Lang, ASC, Remembers "The Golden Age"

Charles Lang, ASC, was enrolled in the law school at USC. His father was a negative developer at Realart, a small studio, which later became part of Paramount.

That was in 1922. "My father became ill, and some friends of his got me a job in the film lab at Realart. If you look back at that period, many cinematographers started their careers in a lab."

Guy Wilky, one of the founding members of ASC, soon took Lang on as an assistant. Lang shot his first picture in 1927, at the age of 26. It was a silent film called "Ritzy." Two years later, his career nearly hit bottom. Lang was shooting a picture with director Dorothy Arzner. "I tried to shoot it the way that I thought Wilky, or Artie Miller or some of the other great cinematographers working in that period would."

Arzner told Lang to be himself, or she would fire him. It proved to be a turning point in his career. He earned his first Academy Award nomination for "A Right to Love" in 1931, and two years later, he won an Oscar for "A Farewell to Arms."

"When we first started making sound films, we were working day and night," Lang remembers. "Most of them were small budget films, which we made in a couple of weeks. The studios just couldn't get enough of them."

In those days, some scenes would be shot silent with sound dubbed later, while other key sequences were recorded with synchronized dialogue.

"Sometimes there would be three or four cameras (in sound houses) on a set, and we would really have to be careful about keeping the microphones out of the scene. Sometimes on a long shot, all you could do was get a board painted the same color as the background, and hang it in front of the microphone."

By the time Lang shot "A Farewell to Arms," in 1932, the cameras were muffled, and Kodak's Super-Speed panchromatic film was in wide use. "A Farewell to Arms" was directed by Frank Borzage, and it starred Helen Hayes.

"That was the picture where I started lighting through the camera. What I would do is pull up the door at the back of the camera and put an amber filter in front. This would show me the image in black-and-white, just the way that the panchromatic film saw it.

"They wanted her (Hayes) to be beautiful. I used a lot of very nice backlighting and lit her hair, while keeping her face in very soft, subdued light.

Opposite: ***Stanley Cortez***

“I lit by eye. You could see what a certain light would do. I didn’t use a light meter until about three or four years later. I remember that my basic camera stop was around f/2.8. Maybe we had 100 footcandles.

“We all developed our own styles of lighting and diffusion in those days. Kodak used to make glass disks for diffusion, and I would take those and grind them down to where it was just right for me. We also used gauze and other diffusion to soften the edges.

“We all did our best to make actresses look beautiful. After ‘A Farewell to Arms,’ a lot of very beautiful actresses wanted me to work on their pictures.”

Lang was nominated for 18 Academy awards before he retired in 1972. He won his last nomination that year for “Butterflies Are Free.”

Movies in Three Colors

In 1935, Technicolor introduced a three-strip process, red, green and blue, which Ray Rennahan used to photograph “Becky Sharp.” Eventually, Technicolor used a special monopack film that eliminated the need to expose three emulsions simultaneously. Kodak manufactured all of the films needed for the Technicolor process, an effort that required considerable research and development.

New Film Technology Keeps Pace

A succession of improved Kodak black-and-white films and processes were introduced during the 1930s. There was type 1212, a background negative; type 1209, a bi-pack panchromatic film; type 1220, a Super-Sensitive panchromatic negative for bi-pack; types 1237, 1238 and 1239, red, green and blue sensitive negatives; type 1232, Super-XX panchromatic film; type 1230, Background-X, type 1231, Plus-X; a variety of special-purpose films for Technicolor and various other subtractive and lenticular color processes and more.

Stanley Cortez, ASC, Talks About Getting Started

“My brother, Ricardo Cortez, was a distinguished film star living in New York City. As a very young boy, I was working as an assistant to Pierre McDonald, a world-famous portrait photographer. One day, my brother and D.W. Griffith invited me to visit Paramount Studios in Long Island, where they were shooting ‘Sorrows of Satan.’ I definitely decided on that day that I would become a motion picture cameraman.”

That’s where the seed was planted. The opportunity occurred a short while later.

Stanley Cortez has vivid memories of that day: “I was working for a portrait studio on 5th Avenue and 46th Street, in New York City and was watching a parade during my lunch hour. I found a good spot on the steps of the public library. Then, I saw Willard Van der Veer, who was a newsreel cameraman for Pathé Revue. I turned my back on the parade, and just watched the rhythm and flow of his hand cranking that camera; it was a beautiful thing to see.”

Cortez introduced himself to Van der Veer, who helped him get a job filming a serial – “The Green Archer” – at Pathé Revue. Another assistant on the same crew was Linwood Dunn, ASC.

After that series was finished, Cortez became an assistant with Alvin Wyckoff, at Paramount Studios in Long Island. “Wyckoff may seem distant to you now, but he was a great man. He was one of Cecil B. DeMille’s favorite cameramen and was instrumental in the organization of IATSE Local 659.”

“. . . I turned my back on the parade, and just watched the rhythm and flow of his hand cranking that camera; it was a beautiful thing to see.”

The Cortez brothers came to Hollywood. “I was fortunate in that I was able to work first as an assistant, and then an operator for some very great cameramen – I made it a point to do that.”

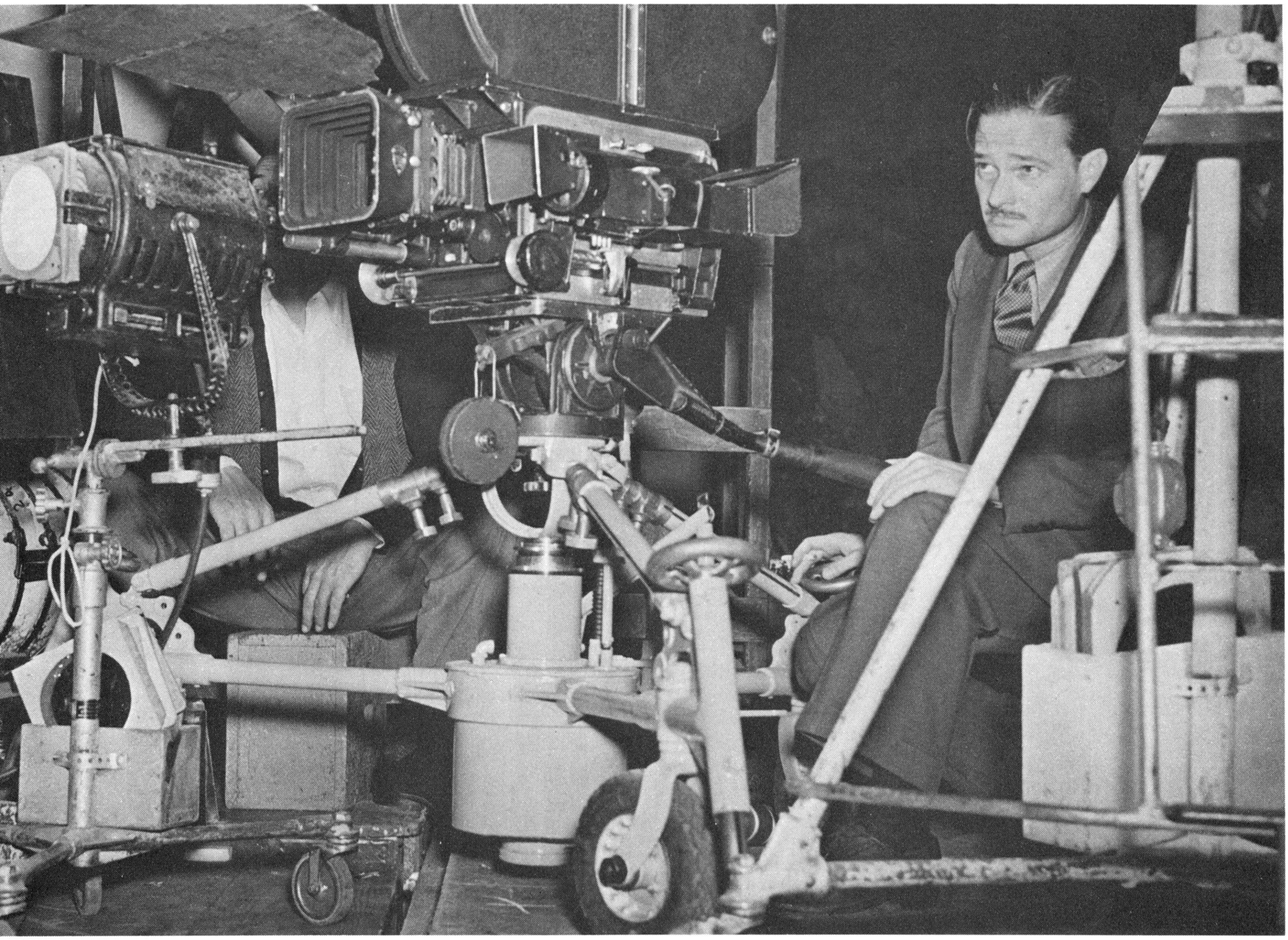
Cortez worked for Karl Struss, Hal Mohr, Arthur Miller, Charles Rosher, John Seitz, Lee Garmes and George Barnes. “I learned by observing how these greats worked. I worked as an operator for George Barnes on some of the Busby Berkeley musicals, and I still get chills when I hear ‘The Lullaby of Broadway’ and remember how Busby and George encouraged me to design a shot or a camera movement.”

It was no picnic. Cortez recalls the times when crews worked until midnight, and then slept on cots at the studio because their call was at 5 a.m.

“This is how you learned the grammar of filmmaking . . . lighting, composition, design; the things that you could do with a certain lens or film.”

Cortez is talking about the unique culture that has evolved in Hollywood . . . the crew system. However, he adds: “It’s also very important to note that no matter how much you are working with a man; no matter how much you have learned from that person; you yourself must do it your own way . . . in terms of lights and shade and camera movement.

“I can take someone off the street, and teach him how to use a light meter; give him a book, which he can read and learn how to expose for an image . . . however, you can’t teach someone how to interpret a script so he can apply the right skills in the right way. When you have someone who has the skill without the artistry, you end up with a very mediocre result.”



Gregg Toland on the hydraulic camera tripod, circa 1940.

Cortez became a director of photography at age 26. The title was "Four Day Wonder."

"I'll tell you how it happened. I was working at Universal, shooting tests and second units. Joe Pasternak sent me to New York to do some pickup shots. One was of a lone man walking down Wall Street amidst the towering steel and concrete buildings which symbolized the power of the financial world.

"It was a self-designed lyrical scene. I remember that it was at the corner of Wall and Williams Streets, facing toward Trinity Church. I put the camera in a manhole so it was at ground level. Then, I spread around some shelled peanuts in front of the lens, and pigeons started flying into the foreground. There were the pigeons, and steam coming up from the sewer, and that unusual angle. That shot got me my first picture."

Cortez has shot some 85 to 90 feature films and has earned two Oscar nominations.

Coming Attractions for Television

In 1934, Bell Telephone Laboratories asked Kodak for technical information about the potential use of film and the related optics that would be necessary to support a "radio-vision" experiment. Six years later, CBS Laboratories and Kodak explored possibilities for using color film on future TV systems. At this point, Kodak launched a major development project exploring potential film/video interfaces.

More Names to Remember

During the second half of the 1930s, a number of cinematographers, not previously mentioned, became prominent. Karl Freund, ASC; Joseph Valentine, ASC; James Wong Howe, ASC; Joseph Ruttenberg, ASC; Ernest Haller, ASC; Ernest Miller, ASC; Harry Wild, ASC; Norbert Brodine, ASC; J. Peverell Marley, ASC; Robert deGrasse, ASC; Joseph Walker, ASC; Leon Shamroy, ASC; Bert Glennon, ASC; W. Howard Greene, ASC; and Sol Polito, ASC, were among the Academy Award nominees cited by their peers for outstanding work. Incidentally, 1939 was the first time that separate Oscars

Arthur Edeson

were given for color and black-and-white photography. Gregg Toland won in the latter category for "Wuthering Heights," and Ernest Haller and Ray Rennahan shared the first color award for "Gone With the Wind."

Folsey on 'Pushing,' Light and Shadows

Thinking back on the period that we have already covered, George Folsey shared these memories:

On "pushing" film . . .

"Do you know where the term 'pushing the film' comes from? Back when we were shooting silent films in black-and-white, we didn't have film speeds or light meters. You would trust your eye. Fortunately, film in those days was processed by rack-and-tank. The lab man would pull a rack out, and we'd look at it in the safelight, and you'd say, 'push it back in for a stop or two.'"

On bouncing light . . .

"I learned a tremendous amount about lighting from Johnny Seitz. He would use only a key light with maybe three 'broads' for fill on either side. He added a lot of diffusion on the fill light, so it was very soft; no shadows. Sometimes he would turn his broads so his fill light wasn't direct . . . it was very soft, and it would just envelop an actress . . . . That's when I first started thinking about using reflected light . . . . I was doing a picture where I had a scene with an actress, and there was a lamp near her head. So I took a reflector and moved it until it was just out of frame. I bounced the light off that reflector back onto the actress, and it looked like it was coming from the lamp. I didn't invent the idea. Johnny and a lot of other people were using reflected light, too."

But it was Folsey's interest in painting which really drove the point home: "I was visiting a gallery in London, and I stopped at this painting by George Ingres of a young boy stepping out of bed with a lot of draperies, and a lot of soft, diffused light which came through . . . it was exactly what I was trying to do . . . I must have stood there for an hour . . . I realized, this was it."

On shadows . . .

"We were shooting this scene, and the actor was wearing a white shirt . . . we wanted to see his face, not the shirt . . . so I had a grip hold a three-step ladder in front of a key light so it created breaks . . . shadows . . . on the actor's shirt . . . the closer that we brought the ladder to the light, the softer, and less defined the shadows got . . . I used that method a lot afterward . . . the grips got tired of holding the ladder . . . so we would hang it . . . then, on a picture with Hedy Lamarr . . . my grip, Harry Reed, told me that he had a better idea. He went down to the carpenter shop, and had them cut this grill . . . that's what I called it . . . out of light wood . . . which we could hang to create breaks . . . a little later, I was visiting Hal Rosson on the set where he was shooting "Boom Town" . . . they were doing a scene with Claudette Colbert on a bed with white sheets . . . I showed Hal my wooden grill, and he used it to create these nice shadows . . . later, he was shooting a complementing scene of another woman on another bed . . . and, he said 'get me one of those high kookaloris things . . . I was the only one who knew what he meant . . . it's a word from a fairy tale. The name stuck, and then someone starting making and selling the kookaloris . . . everyone used it . . . but no one could spell it."

That was 1940.

New Tools for the Cinematographer

In 1941, Kodak introduced Plus-X Cine panchromatic film, type 5231. It was sharper and finer grained than 1231 which it replaced. The following year, Kodachrome professional film, type 5267 was introduced. This was mainly used to shoot stunts, aerials and selected inserts for three-strip Technicolor pictures.

Joseph LaShelle and Fox studio camera.

Rennahan: Color as Good as It Can Get

During the spring of 1941, Ray Rennahan was quoted by a Hollywood trade magazine:

" . . . The day of radical technical experimentation is over. Of course, technical advances are coming, but we'll be able to take them in stride . . . .

"But, speaking as a cinematographer, I'm very sure that we haven't even begun to scratch the surface of the things we, as artists, can do with color . . . greater realism . . . added beauty . . . heighten any dramatic mood . . . .

"Technicolor advances will come, but in the long run, we will find the real future of color cinematography in the hands of the cinematographers."

The Acme-Dunn Optical Printer

In 1942, Linwood Dunn and his long-term associate at RKO, Cecil Love, were commissioned by Eastman Kodak Company and the U.S. Government to design and manufacture an optical printer that could be used by the armed forces. Dunn selected Acme Tool & Manufacturing Company in Burbank, to make the optical printer. It was originally called the Acme-Dunn printer, and it became the printer on which all optical work was done in Hollywood for generations.

In 1944, Dunn and Love received a technical achievement award from the Academy of Motion Picture Arts and Sciences for their design and construction of the first optical printer. In 1981, that award was upgraded to an Oscar.

A Little Trip to Yalta

In 1944, Kodak developed an improved Super-XX panchromatic negative film. "I remember shooting a test on a stage at Pathé Studios in Paris," says Stanley Cortez. "We had an actress on a black stage, and I placed a candle between her and the camera lens. My lens opening was around f/2. It was the placement of the candle in relationship to the lens and subject that gave me the exposure that I wanted. It was wonderful."

Cortez was a buck private in the U.S. Army Signal Corps assigned to travel to the Soviet Union with President Franklin Delano Roosevelt and the American contingent to document the historic Yalta conference. He asked the War Department to get enough of the new film to completely document the three weeks of meetings between the leaders of the world.

"I knew that there were going to be problems regarding the use of artificial light. There were times when we shot that it was almost black. I knew that we would need a film that we could use to expose an image when there was almost no light. This was it."

The film is now in the National Archives, and to this date Cortez believes that it is some of the most important footage that he was ever privileged to shoot.

Joe LaShelle and the 'Fluid Camera'

"'Laura' was my third or fourth picture. Otto Preminger was producing it. But, he wasn't satisfied with the way the picture started, so he went to Darryl Zanuck and had himself put on as director. I had worked with Otto before, when I was operating for Artie Miller. He wanted very fluid movements, not the same old long, medium and close-up sequences. Of course, we had dollies and tracks. But, that wasn't what he wanted. I thought, 'if we only had a little crane that we could put the camera on.' I told Otto about my idea, how we could move the arm and come in over people's shoulders for close-ups, all in one smooth fluid shot.

" Okay, get one,' he said."

It was probably a first on a sound stage. In fact, Sol Halprin, who was head of the camera department, ended up having to borrow a small crane from the Navy.

William Clothier, center, on location with Gene Kelly and James Stewart in New Mexico.

After "Laura" came out, equipment manufacturers started making small cranes. It was 1944.

William Clothier, ASC, An Improbable Beginning

Of all of the improbable beginnings that people have had getting started as cinematographers, William Clothier, ASC, might have the most unusual story.

He grew up in Decatur, Illinois, where his father had a bakery. Clothier joined the U.S. Army during World War I. He was 16 years old. After the war, he hitched a ride to Texas, where his father was working in construction. That didn't work out, so he rode the rails to Hollywood, where his sister was married to a cameraman.

"I was standing outside of Warner Bros. wondering what I had to do to get inside, and I recognized this guy walking out. He was from Decatur and was working at the studio as a painter."

Clothier worked at that craft for awhile, becoming head painter at Alexander Studios, where they shot "six-day" Westerns. "I didn't want to be a painter all of my life. I was making $42 a week, and the art director warned me that the most I could earn as an assistant was $20. But, he got me a job as an assistant cameraman at Alexander."

Clothier was one of 17 assistants to work with Harry Perry, who shot "Wings" on location in San Antonio, Texas, in 1926.

A new look was emerging on television—soft lights, filters, long lenses, very pretty and moody.

In 1933, when the sound technicians walked out of the studios during a labor dispute, they asked for Clothier's help. "I was a pilot, and the technicians who had walked out of RKO asked me to help them out by flying over the studio while they were trying to shoot exteriors. You couldn't record sound with a plane circling overhead.

He did it for one day. The second day, RKO hired a stunt pilot who intercepted his plane. When the labor dispute was settled, Clothier found himself out of a job. "I was hired to taxi a

George Barnes, Cary Grant and Gladys Cooper on an RKO stage in 1942. **Below:** ***Joseph Walker and Rosalind Russell in a scene from*** **This Thing Called Love** ***(1941). Camera crew from left, Bill Jolley, Jimmy Goss and Victor Scheurich.***

plane to Mexico City, where I ran into Charlie Kimball, an editor, who was working on a film. The director of photography wanted to go home, so the production company bought his Mitchell camera, and I finished the film.

"The director, a Mexican, was going to Spain to do some work, and I went with him." Clothier worked as a director of photography in Spain until 1938, when he was jailed by authorities during the Spanish Civil War. "The American embassy had to get me out."

It was 1940, and Clothier was finally back in Hollywood. He shot "For You I Die" and "Sophia" with director John Reinhardt. "I was working on the second unit, shooting aerials for 'For Whom the Bell Tolls' the day that World War II broke out. They didn't finish the picture until after the war."

Clothier spent the war with the U.S. Air Force, flying combat missions out of England on board B-17s. He was discharged as a colonel. After the war, he did a number of second unit assignments involving aerial photography, including one incredible 13-month stint on "Jet Pilot," which was made by Howard Hughes.

"We had our own air force, which included 13 jets. Chuck Yeager was in charge of the planes. Howard Hughes met me late one night at Goldwyn Studios, and he showed me two reels of aerial film from 'Hell's Angels' (a 1929 film shot by Tony Gaudio and Harold Perry). 'I want every shot to be equally as good,' he said."

"I was influenced in some way by every cameraman I have ever worked with .... You learned what not to do by working with some people ... but Victor Milner, Karl Struss, Joe August and Archie Stout influenced me the most ... Archie understood everything about filters ... But Joe August to my way of thinking was one of the greatest of them all ... some cameramen work with a lot of light ... you would have to find ways to squeeze between the units to hold the slate ... Joe could do the same things with four or five lights ... I remember we were shooting once at the old Republic Studios ... It was a cowboy picture with Richard Dix .... We were shooting outside ... and was it was getting dark ... this actor asked why we were still shooting .... He said, 'if this is any good I'll buy you a case of whiskey' ... Next day, he walked out in the middle of screening the dailies. When I came out, he was waiting with the case ... Joe could shoot and match shots working under conditions where others would refuse to shoot."

When he retired in 1972, Clothier had two Academy Award nominations for "The Alamo" and "Cheyenne Autumn." The following year, he received the Heritage Award from the Cowboy Hall of Fame. Over a 13-year period, he won nine of the Best Western Picture of the Year Awards.

A Film Camera for Television

One of the problems with "live" television was that there was no way for the networks to distribute shows so they could be seen in all parts of the country at the same time. In 1947, Kodak culminated years of research in cooperation with the Allan B. Du Mont Laboratories and NBC, by introducing the Eastman television recording camera.

Above: ***Archie Stout and John Wayne in Monument Valley.*** **Next page:** ***Ray Rennahan hovers over set from*** **Northwest Mounted Police.** ***Director Cecil B. DeMille and star Gary Cooper are in the group.***

This was the first camera to satisfactorily convert the 30 video pictures shown each second to 24 frames of film. At the same time, Kodak introduced a kinescope film designed for this application. In addition to solving the immediate distribution problem, this made it possible to syndicate early live TV programs here and overseas, thus greatly increasing their value.

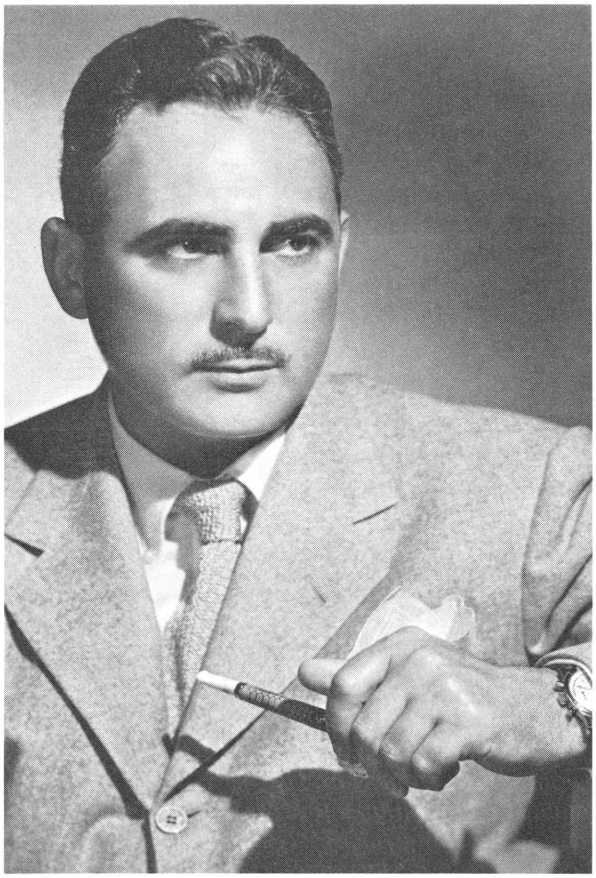
An Oscar for Kodak

In 1948, decades of research finally led to the development of a suitable replacement for 35mm cellulose nitrate base. Nitrate based films were potentially flammable. Kodak triacetate safety-base film earned the company an Oscar for technical achievement in 1949.

Cinematographers During the 1940s

Many new stars were shining in the Hollywood firmament with an average of more than five hundred feature films being made a year. The following are among those directors of photography, not previously mentioned, who were nominated for Academy Awards during the 1940s: Harold Rosson, ASC; Ollie Marsh, ASC; Allen Davey, ASC; W. Howard Greene, ASC; William Skall, ASC; Sidney Wagner, ASC; George Perinal; Leo Tover, ASC; Rudy Mate, ASC; Bill Snyder, ASC; Wilfrid Cline, ASC; Leonard Smith, ASC; Ernest Palmer, ASC; Harry Hallenberger, ASC; Charlie Clarke, ASC; John Mescall, ASC; Ted Tetzlaff, ASC; Milton Krasner, ASC; Elmer Dyer, ASC; Charles Marshall, ASC; Sidney Wagner, ASC; Lionel Lindon, ASC; Glen MacWilliams, ASC; Robert Surtees, ASC; Harry Stradling, ASC; Charles Boyle, ASC; Robert Planck, ASC; Arthur Arling, ASC; Guy Green, BSC; Jack Cardiff, ASC, BSC; Harry Jackson, ASC; Nicholas Musuraca, ASC; Ted McCord, ASC; Billy Daniels, ASC; Joe August, ASC; Winton Hoch, ASC; Paul Vogel, ASC; Franz Planer, ASC and Charles Schoenbaum, ASC.

Leon Shamroy



A New Way to Shoot Color

After more than a decade of research, Kodak brought its first color negative film to the marketplace. Eastman color negative film 5247 was balanced for daylight, and it had an exposure index of 16. There was also a companion color print film and lab process. The year was 1950.

Specialists in the Kodak Hollywood office worked closely with cinematographers and labs. Dr. Norwood Simmons, Vaughn Shaner, John Waner and Dr. Rod Ryan were among the Kodak technologists assigned to this task. It was just the beginning, but the longest journey starts with a single step. Dr. Ryan and Waner both received the Herbert T. Kalmus Gold Medal for their efforts. In 1950, the Academy of Motion Picture Arts and Sciences awarded Kodak an Oscar for the development of the aforementioned film.

In 1953, the second generation of color films was born. Eastman color negative film 5248 was balanced for tungsten 3200 K light, which was fast becoming the Hollywood standard. It had an exposure index of 25 in tungsten light, and 16 in daylight.

Television Discovers Hollywood

By the start of the 1950s, America was in love with television. And, it wasn't too long before television fell in love with Hollywood. Some of Hollywood's best-known cinematographers were shooting film for TV. Pretty soon, the major share of prime-time evening TV shows were on film. Walter Strenge, ASC, won Emmy nominations in 1948, and then again in 1954, for the "Margie" series.

> *"The truth is that the best that a director of photography can bring to a story is honesty."*

In 1956, Strenge won his first Academy Award nomination for "Stagecoach to Fury." That answered an important question for those people who wondered if there was life for cinematographers after TV. Karl Freund, ASC, who had already won Academy Awards for "The Good Earth" and "The Chocolate Soldier," shot the first three-camera film show, "I Love Lucy;" Nick Musuraca, ASC, did "December Bride;" Bob DeGrasse, ASC, did "Amos and Andy;" and, in time, even Ray Rennahan, "the king of Technicolor," was shooting black-and-white TV shows, i.e., "Laramie," "The Virginian" and "The Chrysler Theater."

Tri-X Film Stakes a Quick Claim

In 1954, Eastman Tri-X film, type 5233 was introduced, and this low-light-sensitive emulsion quickly made its mark. People at the Kodak Hollywood office used to talk about how Bob DeGrasse practically confiscated one of their first sample rolls of the 320-speed film.

By then, DeGrasse was on a roll with Danny Thomas, Sheldon Leonard and Dick Van Dyke at T & L Productions. Starting with "The Danny Thomas Show" in 1950, he filmed some 500 consecutive episodes. Most of the cameras had four-inch lenses stopped down to f/5.6 for depth of field. That made it really hot on those sound stages. The new, fast film allowed DeGrasse to slice the footcandles in half.

Meanwhile, Nick Musuraca was shooting "The Lineup," a weekly series at practical locations in San Francisco. Look back at this footage sometime when you think you've seen something new on television. Musuraca did it all; he shot interiors, exteriors, day and night; all conditions. The fast film, he said, gave him an extra stop – and that was all he needed.

Hollywood Gets the BIG Picture

The instant popularity of TV put the theatrical film down, but never out. Even during the darkest days, GOOD pictures drew BIG crowds.

However, what really saved the feature film was that Hollywood changed. It started giving audiences movies that were bigger and better than anything they could see at home. At one point during the early 1950s, every studio had 3-D films in production. However, the 3-D fad quickly dissolved to BIG screen films – Cinerama, Cinemascope, Todd-A-O and VistaVision – to name some of the more popular formats.

Leon Shamroy, ASC, and the BIG Screen

Leon Shamroy, ASC, gained much acclaim for his wide-screen work. He shot "The Robe" for Fox in 1953. That was the first feature produced in the Cinemascope format which offered an incredible 2.66:1 widescreen aspect ratio. Despite the fact that the lenses still were unperfected and much about the new wide-screen format still was experimental, the photography created great excitement in the film industry.

Shamroy shot "The Egyptian" the following year, and then in 1956, he filmed "The King and I" using Fox's CinemaScope 55 process. The 55mm film frame recorded crisp, sharp images with crystal clear definition and excellent color rendition.

By the mid-'50s, everyone was experimenting with various wide-screen formats, which included both 55mm and 65mm origination. And why not? The "blockbuster" films were drawing big crowds back to the theatres.

New Ways to Show Wide-Screen Films

In 1956, Robert Gottshalk organized Panavision. The company's first product was an anamorphic lens which used a variable prism. The lens was devised to allow theatres to show CinemaScope movies without installing special projectors. In all, some 15,000 Panatar lenses were sold to theatres.

Next, Panavision made a lens for MGM, which allowed the studio to convert a CinemaScope image to a conventional aspect ratio. Prior to this, two cameras were used to produce Cinemascope pictures – one for the wide-screen format, and the other for conventional releases.

Getting Rid of Fat Faces

One of the early problems with CinemaScope was that on tight shots, characters appeared to have fat faces. Understandably, actors and actresses resisted the idea of having close-ups of fat faces projected on wide screens.

Panavision developed a lens that eliminated that problem. It was first tested during the shooting of scenes with Audrey Hepburn for "Green Mansions." The first picture photographed in the Panavision 70 process was "Raintree County." The film was released in 1957, but only in the 35mm print format. This led to the development of UltraPanavison, the 70mm system first used by Bob Surtees to shoot "Ben Hur" in 1958.

Lana Turner with cinematographer George Folsey.

New Color Intermediate Film on the Scene

In 1956, Eastman color intermediate film 5253 came on the scene. This was the first two-stage color intermediate film that could be used to make color master positives and duplicate negatives. The intermediate film saved both time and money for both optical houses and labs. More important, it made it feasible to achieve optical effects that were previously thought to be impossible or impractical. The evolution of intermediate film technology came as a direct result of work done by the Kodak Hollywood office technical staff.

Karl Freund tests new spot meter on Nelson Eddy's face as Rise Stevens looks on. The year was 1941.

Film Effects on the BIG Screen

After RKO stopped producing film in 1957, Linwood Dunn merged the special-effects facilities with a company that he had organized in 1947. Film Effects of Hollywood was the first independent visual effects house, a necessity since most of the larger studios were getting out of this business. Dunn, and his associates Don Weed and Cecil Love, helped to create illusions for such big-screen films as "West Side Story," "It's a Mad, Mad, Mad, Mad World," "My Fair Lady," "The Great Race," "Hawaii" and "Airport."

And Then, a Faster Color Negative

In 1959, Eastman color negative film 5250 was introduced. This new color negative film had the same color and image characteristics as 5248, but the exposure index was 50 in tungsten light and 32 in daylight.

More Names to Remember

Some new names were added to the roster of cinematographers nominated for Oscars during the 1950s. The list includes Robert Krasker BSC; William Mellor, ASC; Robert Burks, ASC; Alfred Gilks, ASC; John Alton, ASC; Russ Harlan, ASC; Virgil Miller, ASC; Freddie Young, BSC; Archie Stout, ASC; Burnie Guffey, ASC; Joe Brun; Loyal Griggs, ASC; John Warren, ASC; Boris Kaufman, ASC; Harold Lipstein, ASC; Walter Strenge, ASC; Jack Hildyard, BSC; Ellsworth Fredericks, ASC; Sam Leavitt, ASC; Danny Fapp, ASC and Joe MacDonald, ASC.

Independent Producers in Hollywood

Through the 1940s and into the '50s, most of the best cameramen worked under studio contracts. This practice came to an abrupt halt with the rise of the independent producer. However, it didn't turn out to be an unhappy ending.

"It gave me a chance to be much more selective in what I did," says Joe LaShelle. "I remember just after I went freelance, my agent called – I never had an agent before – and he said that Billy Wilder wanted to see me. To tell you the truth, I didn't know much about him.

"I went over to the studio to see him. He asked a few questions, and then, suddenly, he said, 'Hell, I'm taking up your time, and you're taking up my time. I want you to do the picture. Do you want to do it?'

"So, that's how I came to do 'The Apartment' in 1960. After that, I did three or four other pictures with Wilder, including 'The Fortune Cookie' and 'Irma La Douce' .... I also did some work with John Ford, another great director, after I left Fox, including two of the episodes of 'How the West Was Won,' in Cinerama, released in 1963."

Charles Lang, Milton Krasner and Bill Daniels shot the other three episodes; four Academy Award winners all working on one picture.

The end of the studio system gave both producers and cinematographers a great deal more latitude for making choices. Producers and directors were free to think about who they wanted to shoot a picture and why. This, in itself, probably did as much to raise the stature of the director of photography as anything else.

Remember, 'The Alamo' and Other Westerns, Too

William Clothier remembers, "We shot 'The Alamo' in 65mm, Todd-A-O. John Wayne was directing and acting. He had this funny habit of moving his lips, silently mouthing other actors lines, which was okay, except when he was on-camera. I'd watch him. All I had to say was, 'Duke,' and he'd know exactly what I meant. We'd stop the cameras and start again."

Bill Clothier's first picture with John Wayne was "Blood Alley," shot in 1959. Wayne signed Clothier to a personal contract, which led to 21 more pictures.

"Television was coming on strong, so the movie producers were looking for ways to be more interesting. The big screen was more than a gimmick. It allowed you to tell a bigger story.

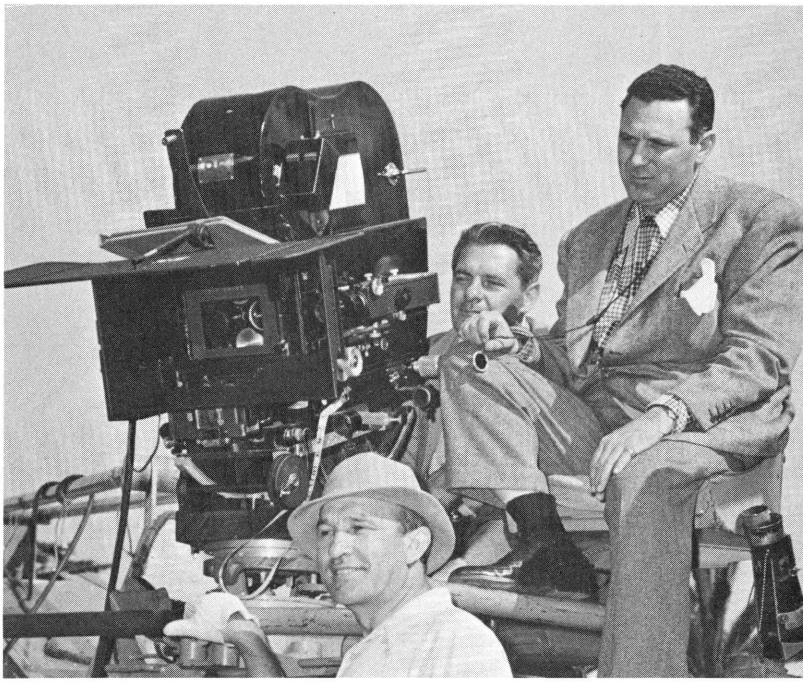
"Composition wasn't any different; you would line it up just like any other camera – but for a big screen ....

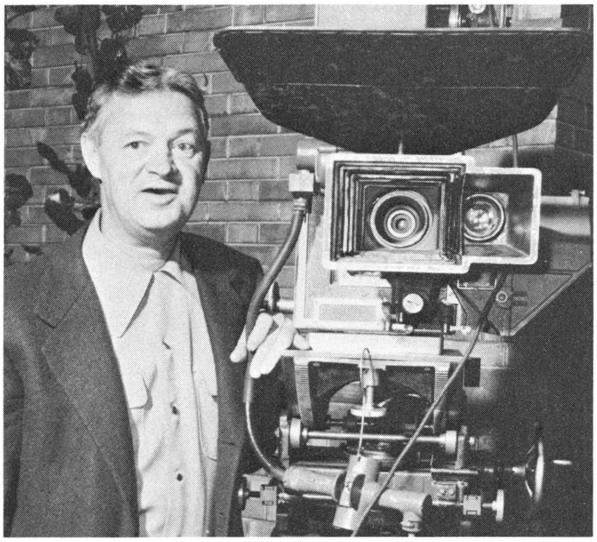
"I'll tell you something about me. I know cameramen who would go outdoors and paint rocks in the foreground, and put in brush in front. I never felt that I could improve on nature. I walked around and looked until I found what I wanted to shoot ... I'd get composition with a tree ... or a bush or a rock .... If you want to establish a sparse desert setting ... you should shoot a vast expanse ... John Ford felt the same way ... We would go out a few weeks before we started shooting and find our locations ... and then we would talk about how to do it."

On the Topic of Black-and-White

Clothier: "I've always felt that black-and-white is more difficult to shoot than color ... you have to make your own contrast with light and shadows ... color gives you apparent contrast ... However, once color negative film came along that became my preference ... I remember when we were going to film "The Man Who Shot Liberty Valance" ... the old man [John Ford] gave me the script to read ... and he told me that we were going to do it in black-and-white .... It was the last black-and-white film that I did.

"Like any film, I started by reading the script, four or five times, until I knew it backwards ... you must know what the story is about, where it takes place, and the feeling, the atmosphere ... after you do this, you can start thinking about lighting ... the main idea is to keep the lighting in the mood of the picture ... like in 'Liberty Valance' ... at that time and place ... people used coal oil lamps ... and they were usually at table level ... you had to keep that in mind when you did interiors ... you had to keep your backlight way down ... and then you follow that, and work with that in mind."





Milton Krasner, **above,** *works on* **The Accused** *(1949). In the foreground is William Dieterle, director.* **Left:** *Harry Stradling Sr., 1952.*

That was 1961.

An Improved Color Film

In 1962, Eastman color negative 5251 was introduced. It was the same speed as 5250, but it was noticeably sharper and finer grained ... this gave both cameramen and optical houses much more latitude.

A Changing of the Guard at Kodak

The W.J. German Company was dissolved in 1963, but most members of that organization joined Kodak, including John "Bud" Courcier,

Loyal Griggs on set of **The Ten Commandments** *(1948).*

George Gibson, Harry Pratt, Les Baker and Fred Godfrey. This move was designed to bring sales and engineering services closer together.

Harry Was Between Oscars

You might say that Harry Stradling, ASC, was "in between" Oscars. He won an Oscar in 1945 for a startling black-and-white feature titled "The Picture of Dorian Gray." During the next 18 years, Stradling was nominated nine times, mainly for big musicals including "Gypsy," "Guys and Dolls" and "Auntie Mame."

Now, it was 1964, and Stradling had a strong feeling that his luck was about to change. The picture: "My Fair Lady," shot for Warner Bros. on their Burbank lot.

Stradling did things with white on this film that people in the industry still talk about – for example, the Ascot scene where scores of dancers are filmed against an all white background.

Stradling poured all of his light through a white backdrop. "If we lit the dancers, we would have bleached the contrast right out of the scene." Instead, he created black-silhouetted dancers against a pure white background, in the middle of a color picture.

He shot "My Fair Lady" in Super-Panavision format with 65mm Eastman 5251 film. "The color rendition is much better than anything we have had to date. Yellow has become yellow, blue, blue, etc . . . There is also a noticeable improvement in grain structure . . . these things are particularly important on a wide screen where every flaw is emphasized."

Stradling won his second Academy Award for "My Fair Lady." However, he was far from finished. He earned his fifteenth Academy Award nomination in 1973 for "The Way We Were." His career stretched over 50 years.

An Anamorphic Lens for the Wide Screen

Panavision made the first anamorphic lens designed to squeeze the recorded image onto a 35mm frame in a way that permitted it to be projected as a wide screen film. The year was 1965. The first test was a picture titled "Dr. Zhivago." F.A. "Freddie" Young, BSC, earned an Oscar for his work.

Eastman 4-X Pan Film

The lights go out in an office building, plunging it into total darkness. It's a tense moment. Gregory Peck, who is playing the role of an investigator, slowly descends a pitch black stairwell, using a pocket pencil flashlight to find his way.

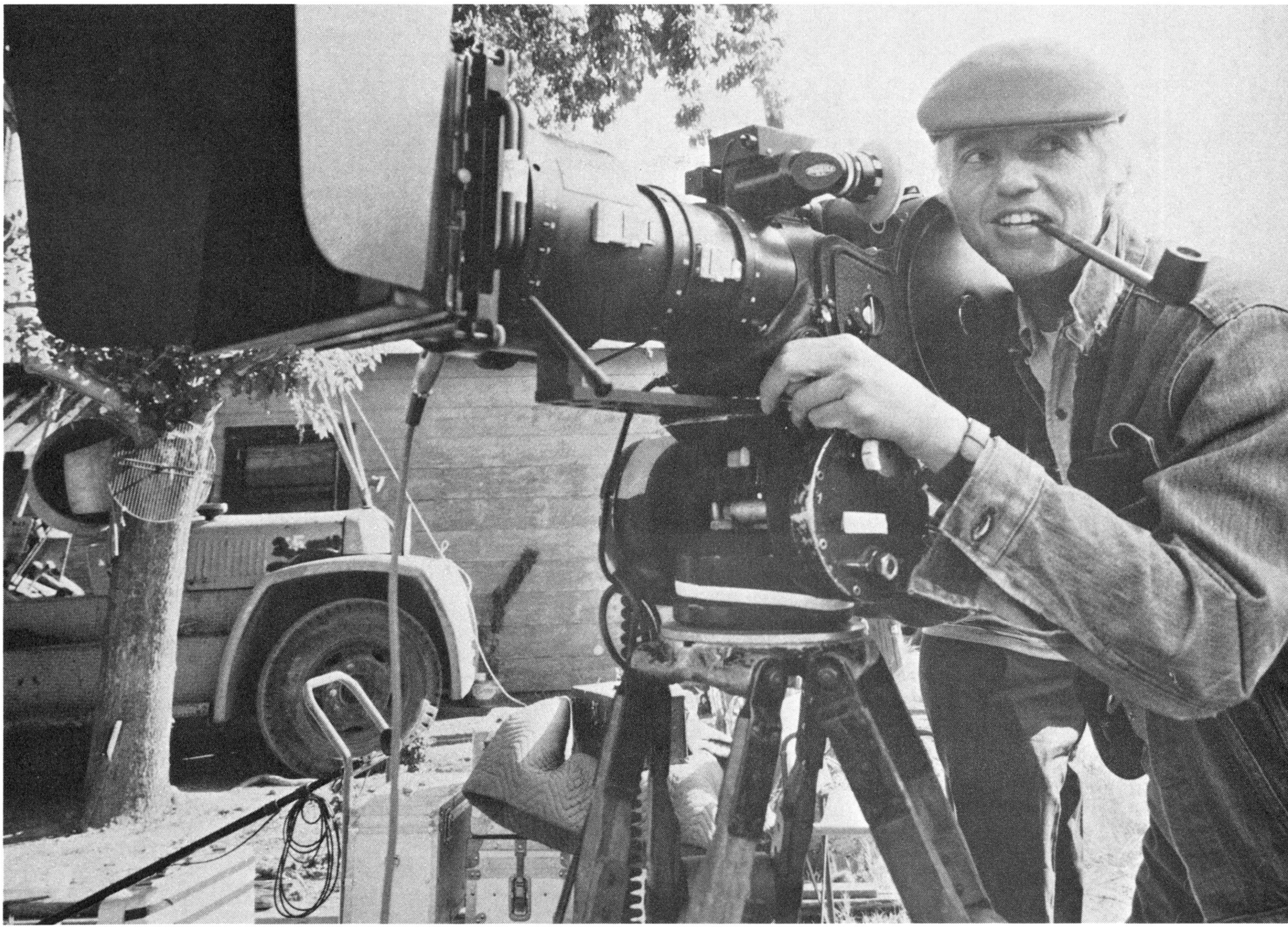
The beam of light picks out every highlight and nuance of action that the director wants. What makes the scene so starkly eerie and believable is the use of the one practical light. Not even a Klieg light is used.

The movie was "Mirage," produced by Universal Studios in 1965, and shot by Joe MacDonald, ASC. The film was Eastman 4-X panchromatic negative film, type 5224. The exposure index was 500.

MacDonald shot key scenes at stop f/4 for depth of field with only 28 footcandles of key light.

And Now, for the Catch

By the time 4-X film was on the scene, both theatrical and TV producers were stampeding to color. Research showed that color had an impact at the box office. NBC Television had been showcasing "Bonanza" for years, and now black-and-white programs were becoming a rarity. By 1965,



Haskell Wexler in 1976 shooting **Bound for Glory.**

practically all prime-time film shows were produced in color.

Coming Attractions on the Tube

To preview what many movies were going to look like in the 1970s and beyond, all you had to do was watch television – commercials, that is. Starting in the early to mid-'50s through the early '60s, a new film-look was emerging on TV – soft lights, filters, long lenses, very pretty and moody. Some of the people shooting these spots were Haskell Wexler, ASC; William Fraker, ASC; Vilmos Zsigmond, ASC; Owen Roizman, ASC and Don Peterman, ASC, to name a few.

The Last Black-and-White Oscar

Haskell Wexler took a rather circuitous route to Hollywood. After graduating from high school in Chicago, where he nurtured a taste for moviemaking, Wexler went to the University of California at Berkeley.

World War II interrupted his studies. He served as a merchant seaman for five years, having two ships torpedoed out from under him in the process. "I managed to stay alive and was discharged as a second officer."

Wexler returned to Chicago and spent several months working in a stockroom at one of his father's businesses. Based on that experience, Wexler decided to become a filmmaker. Eventually, he got into the Chicago local, which led to documentary, commercial and information filmwork.

By the mid-1950s, Wexler was shooting features, including "Angel Baby," "Hoodlum Priest" and "America, America" – which, incidentally, is still on his short list of personal favorites – but not in Hollywood.

That only came after he filled in as an assistant shooting the "Ozzie and Harriet" TV series. In 1966, he received an Oscar for "Who's Afraid of Virginia Woolf?" Wexler made extraordinary use of soft light bounced off umbrellas – a technique that has been widely emulated.

It was the last black-and-white film to win an Oscar. Wexler won a second Oscar in 1976 for "Bound for Glory."

Opposite page:
Robert Surtees with Todd-AO camera.

1968 – A Good Year for Film

If they held Academy Awards for good years for film, 1968 would have to be an odds-on favorite. Eastman color reversal intermediate film 5249 was introduced. This proved to be an excellent tool for making high-quality dupe negatives needed for optical effects and release printing – particularly overseas.

The CRI eliminated the need for a master positive. Kodak earned an Oscar for 5249.

He shot interiors, exteriors, day and night; all conditions. The fast film, he said, gave him an extra stop—and that was all he needed.

Eastman color negative film 5254 also came to the marketplace. This film provided an EI of 100 in tungsten light, and 64 in daylight. It effectively doubled the film-speed of color negative film.

More Good News in 1968

With more films being produced at practical locations, there was a growing need for a quiet reflex camera. In 1968, the Panavision silent reflex (PSR) camera filled that niche. This was followed by a much more advanced model, the Panaflex camera. It weighed less than 30 pounds, didn't require a blimp and could be converted from studio to handheld use in minutes. Subsequently, rapid advances have been made in cameras, lenses and lighting equipment.

Danny Fapp, ASC, Makes His Mark

Danny Fapp, ASC, came to Hollywood in 1923 along with several members of his high school graduating class. There were no jobs in Kansas City, and one of his friends had a connection at a film lab owned by Paramount Pictures.

Fapp got the job which paid $18 a week.

The great incentive in those days was to work hard enough to earn a promotion to camera assistant. When that day finally came, Fapp had to take a cut in pay. Assistant cameramen earned only $25 a week. Fapp worked his way up through the ranks. He spent seven years working as an operator for Ted Tetzlaff, ASC. When Tetzlaff became a director, Fapp became his cameraman.

Fapp earned six Academy Award nominations between 1950 and 1960, winning for "West Side Story."

A trade magazine quoting him during the 1970s said: "I can't pretend to have some special secrets that can help a bad picture with a poor story . . . The truth is that the best that a director of photography can bring to a story is honesty."

More Join the Oscar Nominee List

The 1960s provided fertile ground for first-time Oscar nominees. Among the candidates for this honor roll: Ernest Laszlo, ASC; John Russell, ASC; Freddie Francis BSC; Charles Harten, ASC; Joe MacDonald, ASC; Russ Metty, ASC; Edward Colman, ASC; Eugene Shuftan; Jean Bourgoin; Henri Persin; Walter Wottitz; Lucien Ballard, ASC; Phil Lathrop, ASC; Joe Biroc, ASC; Gabriel Figueroa; Walter Lassally; Conrad Hall, ASC; Ken Higgins; Marcel Grignon; Haskell Wexler, ASC; Ted Moore, BSC; Richard Kline, ASC; Oswald Morris, BSC; Pasqualino DeSantis, and Arthur Ibbetson.

Ernie Laszlo, ASC, Speaks About 'Realism'

During the 1960s, Ernest Laszlo earned six Academy Award nominations for "Inherit the Wind," "Judgment at Nuremberg," "It's a Mad, Mad, Mad, Mad World," "Ship of Fools," "Fantastic Voyage" and "Star."

He won an Oscar in 1965 for "Ship of Fools."

Now, it was 1970, and he was shooting "Airport" and talking about realism. "Realism doesn't depend so much on where you work – the location – as it does on how the picture looks after it is shot. I like my pictures to look real for the audience, so they can have the feeling of actually being at the scene."

Laszlo and his crew spent a month on location at the Minneapolis-St. Paul Airport, where the temperature frequently dipped below -30° F. They shot at night, often eight to ten hours at a time, filming airplanes coming in for landings in a storm.

However, they often used artificial snow because it looked truer than the real thing on film.

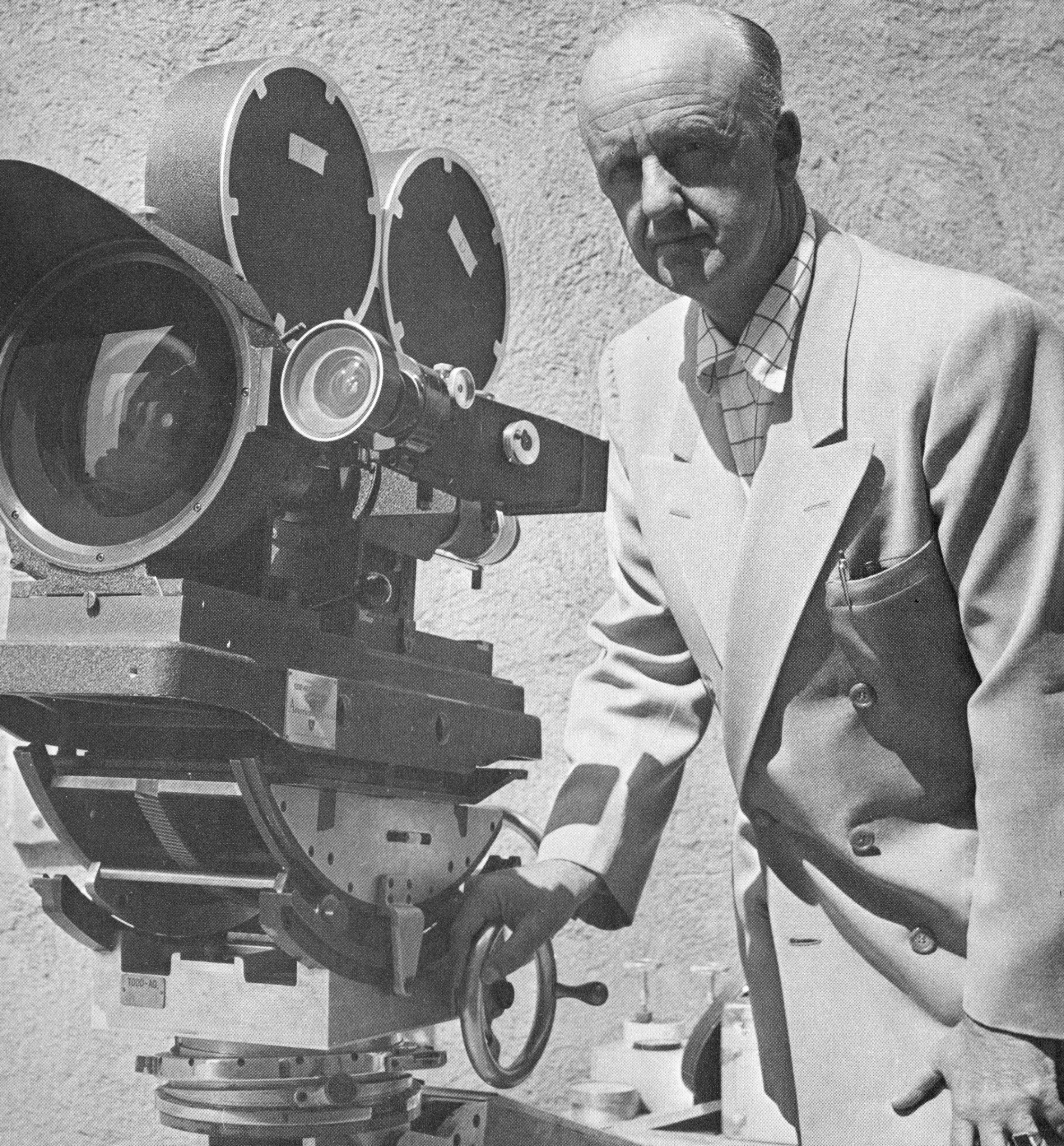
Laszlo won his seventh Academy Award nomination for "Airport," and later in the decade he was nominated one more time for "Logan's Run."

"Silent Running," A Preview of Tomorrow

In 1971, a 28-year-old, first-time director named Douglas Trumbull gave us a glimpse of the future. The film was "Silent Running," which he also conceived and wrote. The story thrust astronauts into an unknown future. Trumbull started thinking about the story while working with Stanley Kubrick on special film effects for "2001: A Space Odyssey," in 1968.

"Silent Running" was a simple story with a cast of four. It featured some extraordinary special effects, including front projection. However, Trumbull was able to keep the effects subdued and natural.

After "Silent Running," Trumbull concentrated on special film effects through the rest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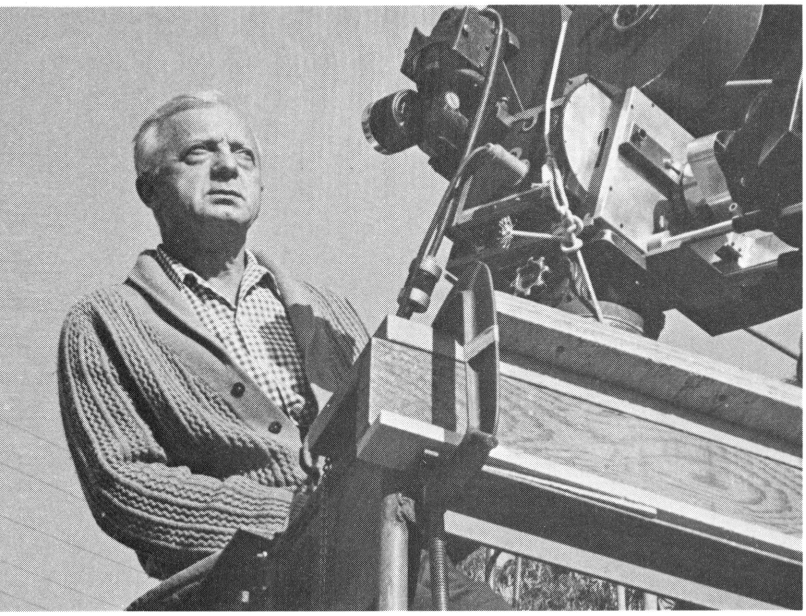
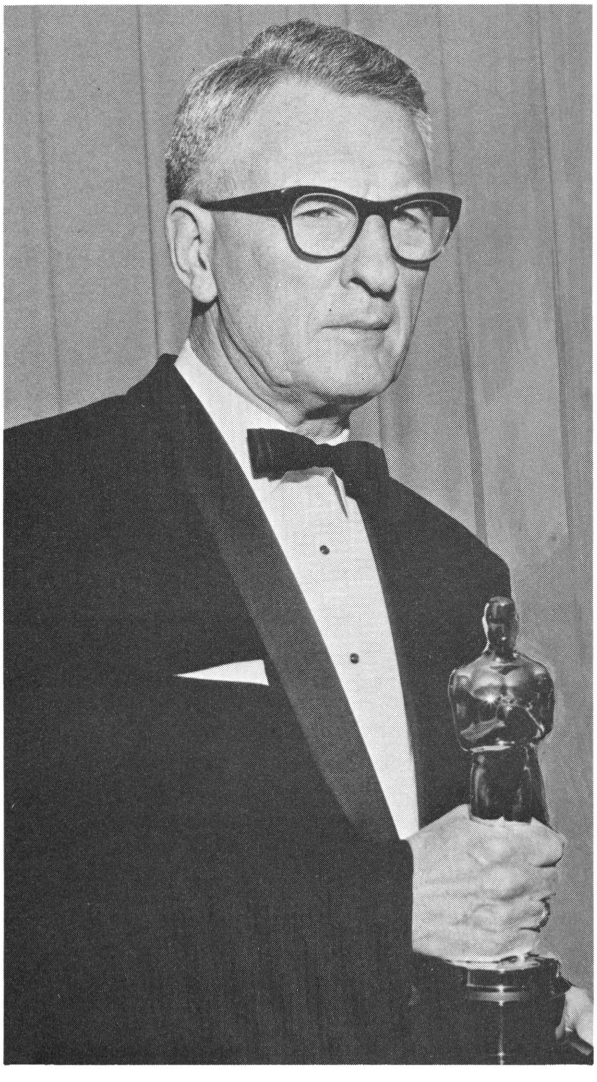




Ernest Laszlo, **above. Right:** *Daniel Fapp receives his Oscar for* **West Side Story** *(1962).*

of the decade, earning a 1977 Oscar nomination along with Matthew and Richard Yuricich, ASC, Roy Arbogast and Gregory Jein, for their virtuoso performance on "Close Encounters of the Third Kind."

The Oscar for special film effects that year went to Richard Edlund, ASC, John Dykstra, Robert Blalak, Grant McCune, and John Sears for another science fiction film, "Star Wars."

5247 Film Joins Family of Eastman Films

In 1974, Eastman color negative II film 5247/7247 came onto the scene. This new film had the same recommended exposure index – 100 in tungsten 3200 K light, and 64 in daylight – as its predecessor; however, the grain structure was much finer.

Bob Surtees, ASC, Ends Career on a High Note

You would have thought that he was the only one shooting film during the 1970s. Bob Surtees ran off a string of seven Oscar nominations during the decade. That sounds pretty incredible even before you consider that he retired after shooting "Same Time Next Year" in 1978.

In all, Surtees earned 16 Oscar nominations in a career stretching over 52 years – 35 of them as a director of photography. He had almost 100 feature films to his credit, and won Oscars for "King Solomon's Mines," "The Bad and the Beautiful" and "Ben Hur."

Surtees was born in Kentucky and grew up in Ohio. He moved to Los Angeles with his family in 1925 and, soon afterward, he got a job as a film loader at MGM. It took him 18 years to advance through the ranks before he finally got a shot at being a director of photography in 1942.

With all of his successes, Surtees never took anything for granted.

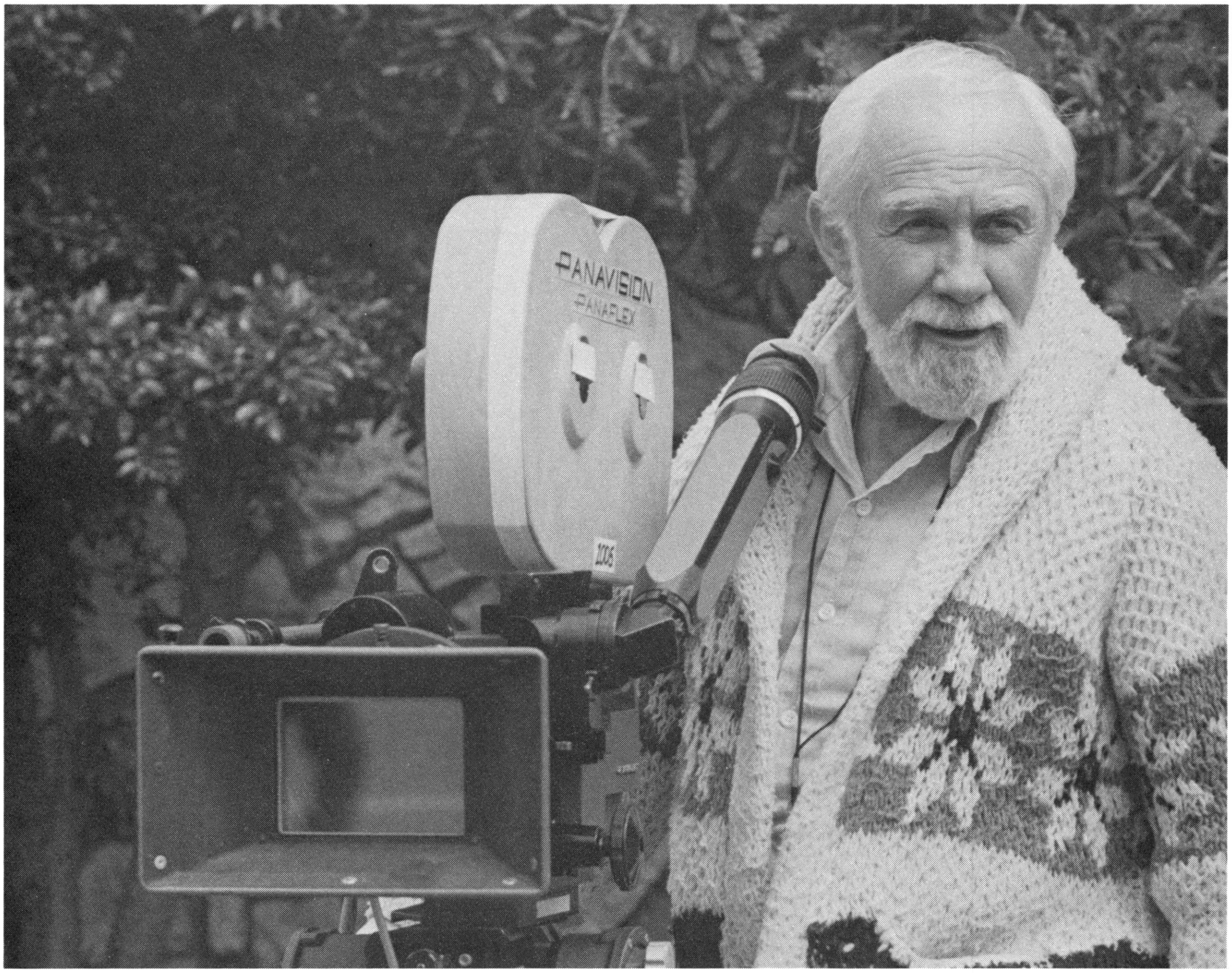
". . . no matter how many pictures you make, you never really know how you did until you see how the public responds. And then there are always things you think of that you would want to add."

Palmieri, Jr.: What Made "M*A*S*H" Run?

If you had to pick the most popular and influential TV program of the 1970s, "M*A*S*H" wouldn't be a bad choice. The show led in the Nielsen ratings race for years and established a record for viewers when the last episode aired.

Dominick Palmieri, Jr. had more than a little to do with this, having shot the last six seasons of "M*A*S*H." He grew up in Schenectady, New York. Between his tenth and eleventh birthdays, Palmieri sold vegetable seeds to raise enough money to buy a Brownie camera.

Around that time, he saw "King Solomon's Mines," and wrote a fan letter to cinematographer Robert Surtees. "He was the star in my eyes."



William Fraker, 1985

Palmieri received a handwritten reply. With encouragement from Surtees, Palmieri studied at the Brooks Institute of Photography. After graduation, he landed a job as a film loader at MGM.

"M*A*S*H" was his first assignment as a director of photography.

A Better Intermediate Film

Eastman color intermediate II film 5243 was introduced in 1977. This improved intermediate incorporated advanced emulsion technology which made it sharper and finer grained. The result was that optical houses and labs were able to produce better results. An intermediate film may seem to be far-removed from the everyday concerns of the cinematographer. However, it can have a great deal to do with how the audience perceives the film on the theatrical or television screen.

Film and Video Get a Little Closer

The same year – 1977 – Rank-Cintel installed its first production color telecine in North America. The unit used flying spot scanner technology to transfer film to video tape. Because of a gentle capstan movement, it was feasible to transfer original negative film to tape without fear of damage.

This device produced a considerably improved video image. Within a very short time, some producers of commercials saw this as an opportunity to get the best of both worlds – film and video. They could enjoy the creative and production advantages of originating on film and transferring to video tape for postproduction and distribution.

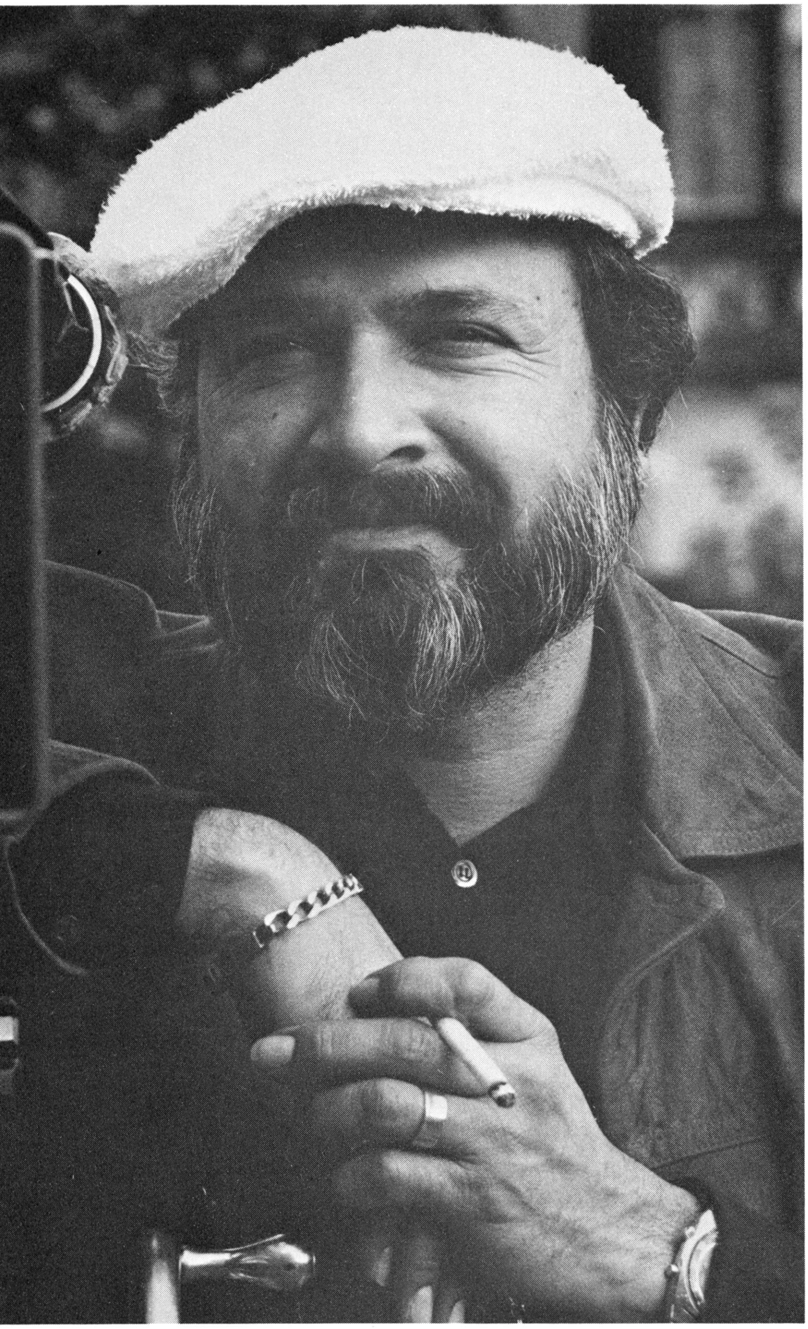
The number of these advanced technology telecines quickly multiplied. Rank-Cintel continued to upgrade its telecines, adding more automated features for color balancing, among other uses of its computer technology.

Bosch and Marconi have also developed advanced color production telecines using charge-coupled devices (CCDs) as the scanner. Kodak engineers have worked closely with this segment of the industry to refine techniques and to develop film and video products designed for these applications.

By the end of the 1970s, there were well over 100 advanced production telecines in use.

New Film Earns an Oscar for Kodak

In 1978, Kodak received a Scientific and Engineering Award from the Academy for Technical Achievement for the development of East-



John Alonzo at work

man color intermediate II film 5243. The following year, it was upgraded to an Award of Merit, an Oscar.

A Changing of the Guard

Many of Hollywood's most venerable cinematographers had called it a career by the end of the seventh decade of the century. Others were thinking about doing so. Their ranks were being filled by a highly talented cadre of younger cinematographers – some called them the New Wave. A few made their marks in the 1960s, Haskell Wexler, ASC and Conrad Hall, ASC, to name a couple. By the 1970s, the floodgates were opened and Bill Fraker, ASC; Vilmos Zsigmond, ASC; Fred Koenekamp, ASC, and Owen Roizman, ASC, among others, came pouring through.

Meet Some of the New Cast

Bill Fraker is an alumnus of the USC School of Cinema, which he attended after World War II on the G.I. Bill – "the only way that I could have afforded to go." Fraker moonlighted for years, doing inserts for commercials and "grab shots" for features. After finally getting his union card, he worked as an operator for TV films for 10 years. That led to an assignment shooting commercials in 1965, which led to "Games," his first film, in 1966. He won Academy Award nominations for "Looking for Mr. Goodbar," "Heaven Can Wait" and "1941" during the 1970s. More was to come during the 1980s when he earned nominations for "War Games" and "Murphy's Romance."

> *"I never felt I could improve on nature. I walked around and looked until I found what I wanted to shoot . . . I'd get composition with a tree or a bush or a rock . . ."*

Vilmos Zsigmond grew up in Hungary during the cold war, and graduated from the state film school in 1955. He and Laszlo Kovacs, ASC, smuggled some 12,000 feet of documentary footage out of the country during the short-lived 1957 rebellion that was crushed by the Russian army. He came to the U.S. unable to speak a word of English. Zsigmond worked in a film lab, shot industrial and educational films, and a half-dozen or so low-budget features. The advertising agencies discovered him during the early 1960s, and Zsigmond honed his skills shooting commercials. His first feature film, "The Hired Hand," was made in 1964. During the 1970s, he earned Academy Award nominations for "Close Encounters of the Third Kind" and "The Deer Hunter." Zsigmond won an Oscar for "Close Encounters" in 1977. His most recent Oscar nomination was for "The River."

Fred Koenekamp was born in Los Angeles. After World War II, he started as a film loader and worked his way up through the ranks. Television gave him an opportunity to advance to first camera, and Koenekamp took advantage of it, winning several Emmy nominations for his work on "A Man From Uncle." During the 1970s, he earned Academy Award nominations for "Patton," "The Towering Inferno" (with Joe Biroc, ASC) and "Islands in the Stream." Koenekamp and Biroc won an Oscar for their work on "The Towering Inferno" in 1975.

Owen Roizman was born in Brooklyn and grew up in the New York City area.

Roizman studied math and physics at college. After graduation, he went to work for MPO, a New York commercial house, starting as an assistant cameraman. He was there for ten years, and shot hundreds of TV spots, mainly with Gerald Hirschfeld, ASC. "The French Connection" was his first feature film – at least the first that was released. Roizman got an Oscar nomination for that in 1971. He also earned Academy Award nominations for "The Exorcist" and "Network" during the '70s. During the 1980s, he earned another Oscar nomination for "Tootsie."

Other Nominees During the 1970s

A number of other cinematographers made the Academy Award nominee roster for the first time during the 1970s: Charles Wheeler, ASC; Sinsaku Humeda, Masamicho Satoh, Osami Furuya, Billy Williams, BSC; Oswald Morris, BSC; Harold Stine, ASC; Harry Stradling, Jr., ASC; John Alonzo, ASC; Phil Lathrop, ASC; Douglas Slocombe, BSC; Sven Nykvist, ASC; Jack Couffer, ASC; Bruce Surtees; John Alcott, BSC; Nestor Almendros, ASC; Frank Phillips, ASC; Giuseppe Rotunno, ASC, and Vittorio Storaro, AIC.

Datakode® Magnetic Control Surface Debuts

In 1982, Kodak demonstrated a new technology that could dramatically cut postproduction costs. Datakode control surface is a transparent layer of magnetic oxide applied across the back surface of the film. It can record up to one hundred binary bits of machine-readable information per frame.

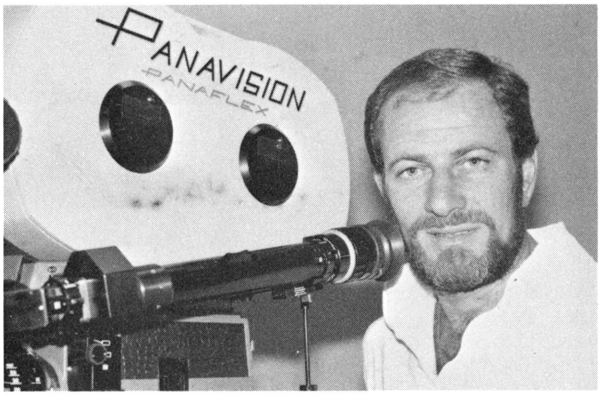
The bits are recorded on the negative with a magnetic head installed in the camera. The only change for the camera crew would be the elimination of the clapstick. SMPTE time-code would be recorded instead, and the script supervisor could opt to use a keyboard to write production notes on the film instead of on paper.

The time-code would be simultaneously recorded on the film and audio tape. This would speed up negative assembly considerably. In addition to being a big time and cost saver with a speedup of negative assembly, dailies could be viewed hours earlier.

The Motion Picture Association of America (MPAA) appointed an ad hoc committee, headed by Cinema Products president Ed DiGuilio, to study the practicality of this new technology, and to recommend steps needed to implement its use.

A Color Film That "Sees" in the Dark

Eastman color high speed negative film 5293/7293 took the production industry by storm after it was introduced in 1982. With a recommended exposure index of 250 in tungsten light, the new film made it possible to halve the footcandles required for exposure. In extreme production situations, it could literally "see" in the dark.



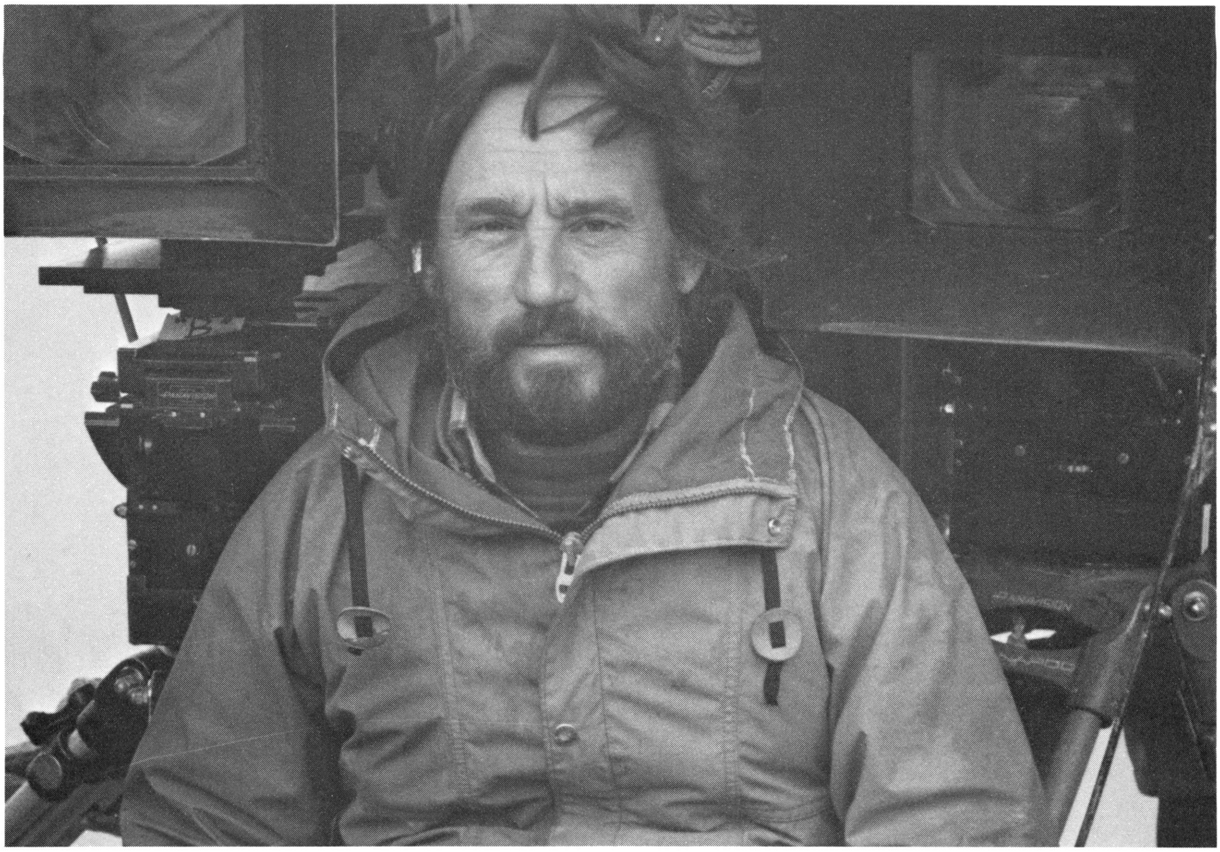
Above: ***Allen Daviau receives Kodak award from William Koch, Eastman vice president.*** **Left:** ***Owen Roizman***

John Alonzo, ASC, was one of the early innovators with 5293, shooting "Blue Thunder" at an EI of 1600. The movie about a special unit of the Los Angeles police was mainly shot at night at practical locations, including many aerial sequences involving helicopters. This was also the year that Eastman color print film 5384 and process ECP-2A were introduced. The new print film featured state-of-the-art developments in dye stability that greatly extended its potential life.

Another Emmy for the Trophy Case

The broadcasting industry saluted Kodak in 1982 by awarding the company an Emmy for the development of Eastman color high-speed negative film. The same year, the Academy approved a Scientific and Engineering Award (Academy Plaque) for technical achievement for presentation to Dr. Roderick Ryan and Edward Blasko, of the Kodak Hollywood Office, for work that they did to help expedite processing of some of the special films used by optical effects houses.

Vilmos Zsigmond



Low Light Levels for "Tootsie"

" . . . Cinematography is partly an art and partly a craft. In order to practice the art, it is necessary to master the craft. That is probably the most significant thing about the new high-speed emulsion. It provides the craftsman with a new technical tool which allows him or her to practice the art of painting with light."

That's Owen Roizman, ASC, talking about his use of 5293 during the production of "Tootsie." Roizman won his fourth Oscar nomination for "Tootsie."

Andrew Laszlo, ASC, Lights Their Fire

"Clean, honest and hinting of fantasy." That's the look that Andrew Laszlo, ASC, designed for "Streets of Fire," a futuristic movie with tones of music video told in basic hues of blacks, browns and grays. The story is about survival in a future world which has the trappings of an over-mechanized society running out of spare parts.

Director Walter Hill erected a huge black tarp over a four-and-half-acre city streets set on the Universal backlot. Initially, the tarp was going to be used only for night scenes to eliminate the cost of shooting night-for-night. However, when Hill and Laszlo noticed the unique quality of light filtering through intermittent white silk panels in the tarp, they decided to keep it in place.

The new high speed film (5293) allowed Laszlo to paint with extremely fine strokes of light and shadow (or the absence of light). Most night scenes were shot by ambient light from neon signs, a few street lamps, and some well-placed 300- and 500 watt lights. In one scene, Laszlo used a small, disposable flashlight to put a touch of fill on a character's face.

"It (the high-speed film) has eliminated most of our concerns about lighting for exposure. The cinematographer is now free to use light to support the illusions . . . ."

Laszlo is a native of Hungary, where he started his film industry apprenticeship. He came to the U.S. in 1947, just barely after his 20th birthday. He began his climb up the ladder starting as an assistant cameraman during the mid-1950s and advancing to operator on "Sgt. Bilko" and then "The Naked City."

Bill Spencer, ASC, Shoots for "Fame"

"Cinematography is the art of subtracting rather than adding light . . . . I want to be able to use diffusion, cutters and any other gadgets to create breaks in my lighting."

That's William (Bill) Spencer, ASC, talking about his approach to shooting "Fame," an episodic TV series which earned him an Emmy during the 1981-82 season.

Spencer literally grew up in the shadow of MGM Studios, where "Fame" is pro-

Richard Edlund

duced. His father worked for Lewis B. Mayer for 35 years and was studio manager at the end of his career.

In 1938, Spencer took a job carrying boxes of film at the MGM film lab. Before his 20th birthday, he was on Karl Freund's crew during the production of "Cabin in the Sky." After he made assistant cameraman, Spencer apprenticed with Harry Stradling and George Folsey. "They should have charged tuition," he says.

Spencer was ready when television opened the door. His first show as a director of photography was "The Thin Man," followed by such hits as "12 O'Clock High," "Barnaby Jones" and "The F.B.I."

"Fame" is about youngsters at a performing arts high school with every episode featuring a major production number. Spencer's task was to create a sense of reality with high-production values, while shooting on sound stages with a TV schedule and budget. He prelit all major sets, saving time and allowing painstaking control of light and shadow.

Spencer started "Fame" using 5247 film but during the second season he switched to 5293 which he exposed at an EI of 320 – slightly above the recommended EI. This allowed him to work at stops T-5.6 and even T-8 providing the depth of field needed to pull deep focuses on dance numbers and other complex scenes.

"This is important since backgrounds don't go fuzzy in real life. This film sees things just about the way the human eye does. The images not only look better, they also look truer. Attention to this type of detail makes the audience feel more involved."

Shedding a Little Less Light on the Subject

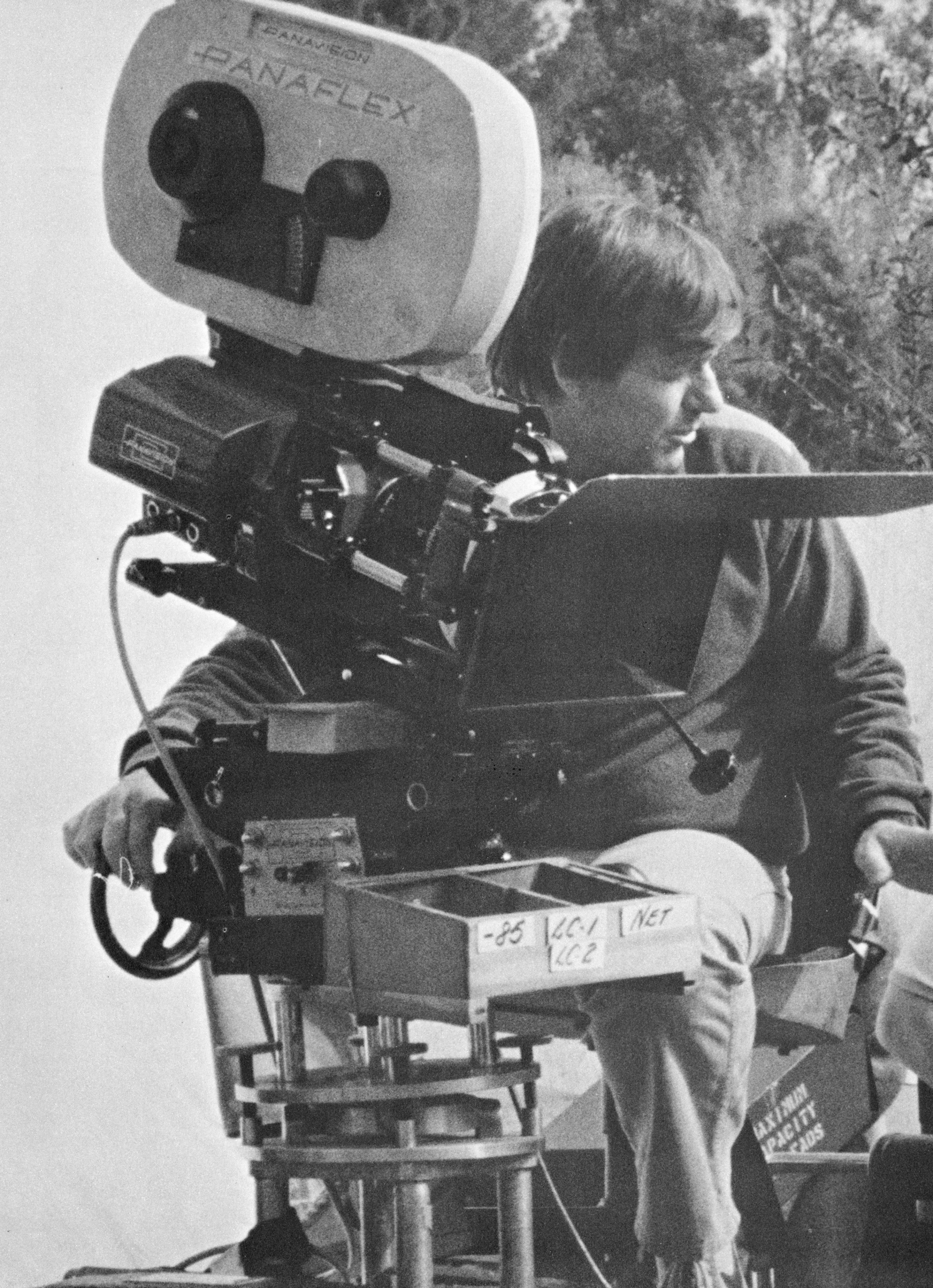
With the wide acceptance of 5293/7293, it is fair to ask why Kodak brought an even faster film to the marketplace only a year later.

The answer: A Kodak survey found that most directors of photography were using 5293 at EI 400 in tungsten light, or at even lower light levels. That meant they were sacrificing some degree of image sharpness and grain. So, Kodak fine-tuned Eastman color high speed negative 5294 to produce the best possible color and image characteristics at a recommended EI of 400.

Remember, that's just a recommended EI. The film has broad latitude, which means that it can be rated at higher exposure indexes for both practical (if you need to get a particular shot at extremely low light levels) and creative reasons (if you like the look that you get at EI 600, 800 or more in a particular situation).

And Now for the Ballots

Following are reactions of various cinematographers to 5294 film as quoted in leading trade magazines:


PANAVISION
PANAFLEX
-85
LC-1
LC-2
NET

Opposite page: ***Don Peterman***

John C. Flynn, III: "I first used the new high-speed film during the production of "Hill Street Blues." After extensive testing, Flinn decided to rate 5294 at EI 800 for that program. "At that EI, it gives me deeper action, and deeper feeling, with a pinch more depth in the blacks [than 5293]."

Typical squad room scenes had pools of light and shadow ... 10 footcandles one place, 20 another, 50 someplace else, and four or five in other spots. "The film holds it all. You can see the feelings on the screen. It looks real."

Charles Correll, ASC : "This picture ["Star Trek III: The Search for Spock"] is ... being made entirely on stages at Paramount ... You start from nothing, and every single set has to be lit in a believable vein."

> *". . . No matter how many pictures you make, you never really know how you did until you see how the public responds ... and then there are always things you think of that you would want to add."*

A particularly tough scene was the circular bridge set with at least a six-foot spread between foreground and background. Correll wanted to keep his key light down to 25 to 50 footcandles. "We needed that for reality. If we put more than 50 footcandles on that set, the image would start to go limp. Also, the lower the key light, the more comfortable we keep the set for the cast."

In these circumstances, Correll rated 5294 for an EI of 1250, which included a one-stop "push" at the lab. "I was astonished when I looked at the dailies ... There are no color shifts. The depth of field is crisp."

Victor Kemper, ASC : "I used 10,000 feet of 5294 to shoot the last scene in "Mr. Mom" ... the blacks were so black, and it only required a small touch of fill in the shadows ... With 10 footcandles of key light, I could easily work at T-2.8."

Kemper's next picture was "Cloak and Dagger." He reported, "There are scenes where the key light is five footcandles with one footcandle of fill .... Anytime you have less equipment to deal with, you have more time to be creative. Art in cinematography comes from subtracting, not adding light."

David Walsh: "I used 50,000 feet of 5294 during the production of 'Unfaithfully Yours.' Most of this film was exposed in a nightclub scene ... it was a large set with many tables and a lot of people. In an effort to keep it as realistic as possible, we used the table lamps as illumination on the people. Our light levels were in the range of four to six footcandles .... The whole thing worked sensationally for us. The blacks retained their crispness, and the people looked wonderful ... we did it with smaller units [lights], keeping the set cooler and saving a lot of money."

Walsh offered an interesting observation: "'Unfaithfully Yours' was a remake of a satirical comedy first produced in black-and-white in 1948. In one scene, there is a romantic candlelight dinner at the Russian Tea Room, in New York. The black-and-white film had an EI of 50. "You needed 400 footcandles for a T-4 exposure. Now, we can shoot the same scene at the same T-stop in color with 40 footcandles ...."

Making Film Look Better on TV

An investment of years of research paid a big dividend in 1984 when Eastman color LC print film 5380/7380 was introduced. Current TV systems literally can't see all of the details in shadow and highlight areas on today's high resolution emulsions. The result was that the most subtle imagery created by talented cinematographers never made it to the TV screen.

By reducing contrast in shadow and highlight areas, the new print film allowed TV systems to see and replicate many of the finer details. By the end of 1984, the vast majority of evening prime-time film shows on the ABC, NBC and CBS television networks were using the low-contrast film as a video interface.

Video Postproduction Makes an Impact

By mid-decade there were more than 300 advanced production telecines in use in the United States at film labs as well as video postproduction facilities. Almost all of the film seen on U.S. television is now transferred to video tape with one of these devices.

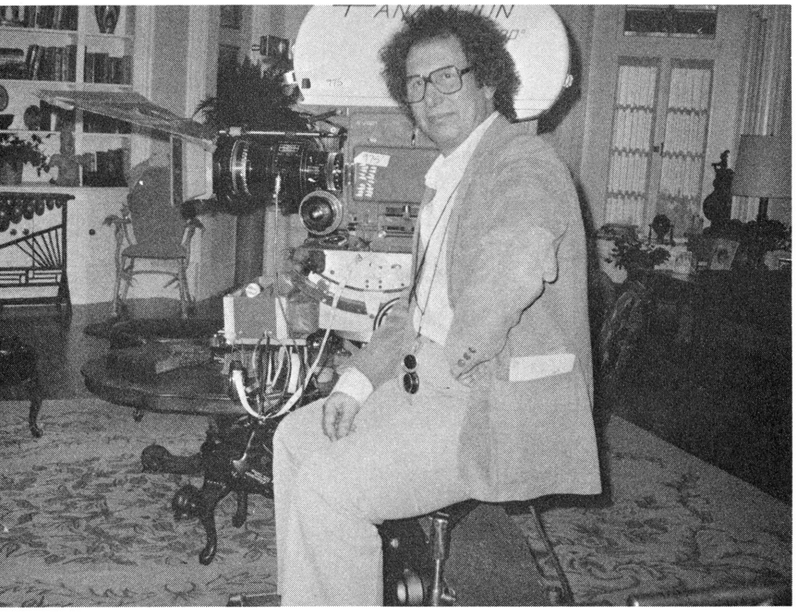
Richard Edlund, ASC, the Magic Continues

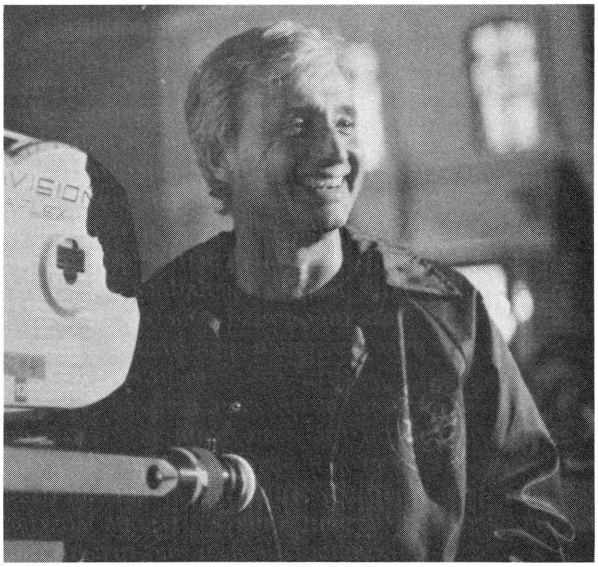
Starting with "Star Wars," a new breed of special visual effects artists staked a claim in Hollywood, and they brought their own brand of magic. One of the prominent members of this new cast of characters is Richard Edlund.

Edlund was born in Fargo, North Dakota, but he grew up in the Los Angeles area where he learned the basics of photography as a teenager. Edlund learned about high-speed photography in the U.S. Navy before enrolling in the USC School of Cinema in 1961. Two years later, he got a job with Joe Westheimer, ASC, who operates a special effects studio in Hollywood.

In 1975, John Dykstra recruited Edlund for the team George Lucas was building to produce "Star Wars." "I remember the first time that I read 'trust in the force' in the script and tried to visualize how to make audiences see that."

During the next decade, Edlund earned four Oscars for his part in creating visual effects for "Star Wars," "The Empire Strikes Back,"





Above: ***George Spiro Dibie.*** **Below:** ***Victor Kemper***

"Raiders of the Lost Ark" and "Return of the Jedi." He has also won nominations from his peers for "Poltergeist," "Ghostbusters" and "2010."

"When you come right down to it, special effects are magic," says Edlund. "It's making an audience believe they saw something other than what actually happened . . . If you do it exactly right, the audience will participate in the illusion. You can help set a mood that makes the audience part of what is happening."

Edlund believes that the new grammar of special film effects is still being delineated. "It's like learning to think in a new language as well as speak it. The possibilities are infinite."

Kodak Enters Videotape Arena

Eastman professional video tape was introduced in 1984. Kodak said that its entry into the video-tape field was designed to support a growing need for more television program production and distribution for entertainment and information.

A Visit with George Spiros Dibie

George Spiros Dibie was lighting a night scene for "Mr. Belvedere," a TV series. The source light for the scene was artificial moonlight; however, the main character was obscured by shadows until a flashlight beam sliced through the darkness and lit his face.

> *". . . Cinematography is partly an art and partly a craft. In order to practice the art, it is necessary to master the craft."*

A network executive didn't like what he saw on his monitor. He told Dibie to bring the lighting level up. It's a common order on a video show. Comedy lighting is almost always UP. But Dibie, an uncommon director of photography with strong beliefs in his art and deep roots in the craft of film production, stood his ground.

"What's the point of writing a night scene if you light it like day," he asked?

Dibie won this round. Maybe it's a small victory. But small victories are what good video is made of. "We see the real world in light and shadows. If you want people to accept Mr. Belvedere as a real person, you have to create real-life situations."

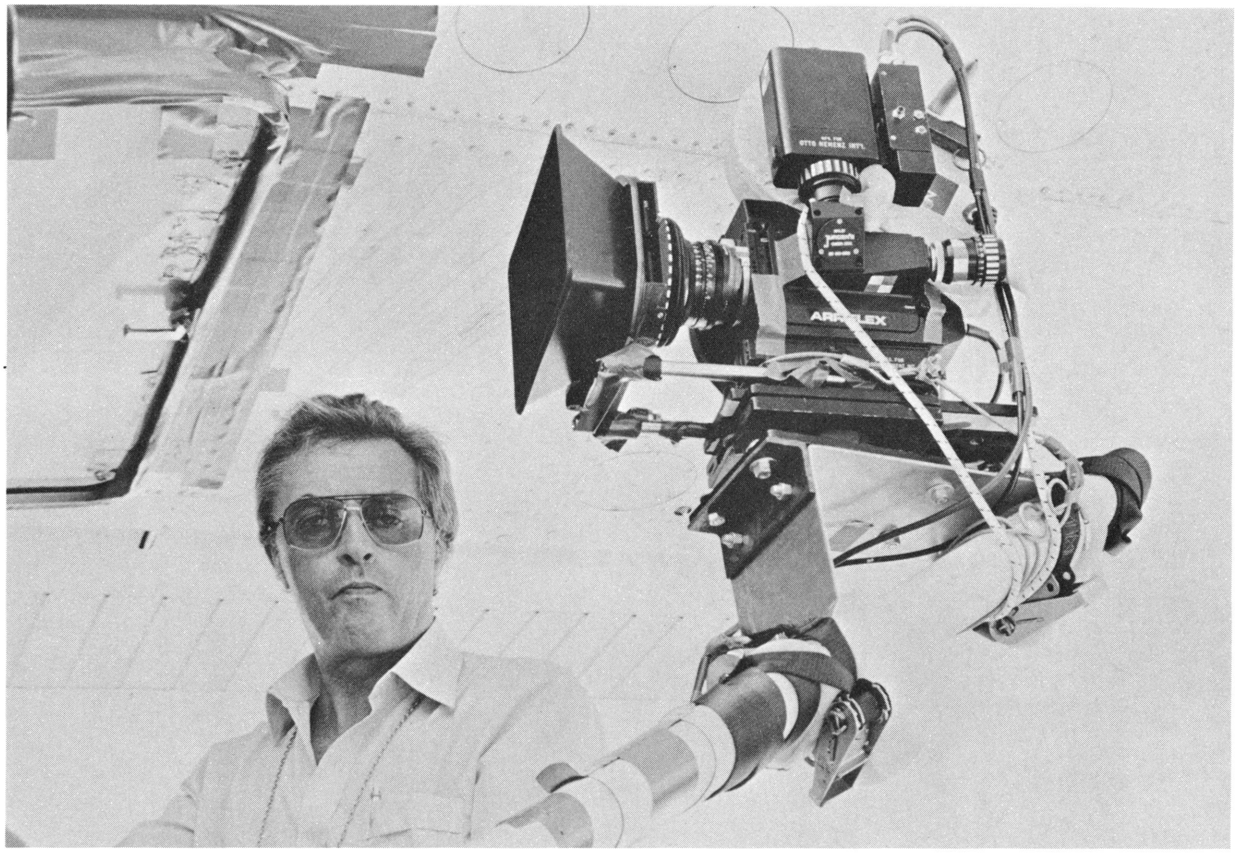
Dibie was born in Jerusalem to a Greek father and Lebanese mother. His fascination with the moving image goes back to childhood, when he recalls creating cartoons by cutting and pasting comics into long strips and using a flashlight as a projector. As a teenager, Dibie dreamed of coming to the United States to learn about filmmaking.

Dreams sometimes do come true. Dibie earned a degree in theater arts and worked as a director at the Pasadena Playhouse. In 1959, he was hired as an electrician, and soon advanced to gaffer.

In 1972, he joined IATSE 659 as an electronic cameraman, a new category. It was an interesting departure since all of his previous experience was in film. Two years latter, Dibie became a lighting consultant on the "Barney Miller" show, creating a visual texture by using light and shadows to establish moods and settings.

Dibie lights a video set the same way he approaches a film set. "I trust my eye, my viewing glass and my light meter . . . and I light from the floor rather than the control room. A scope doesn't show you if your lighting rings true or if it establishes the right setting or mood."

"Mr. Belvedere" was the first prime time evening show recorded on one-inch East-



John Alcott

man professional video tape. Dibie won an Emmy for his extraordinary work on this show.

Datakode Control Surface Moves a Step Closer

In 1984, the MPAA ad hoc committee studying the feasibility of Datakode magnetic control surface as a postproduction tool issued its report along with recommendations for technical requirements and equipment needs.

Advanced Cinema International (ACI), was formed in Hollywood for the purpose of leading the effort to design and develop the tools needed to bring Datakode control surface to the marketplace.

Soon afterward, ACI announced that Universal City Studios would produce a made-for-television film using Datakode technology as soon as all of the tools are available.

Bright New Stars

By the mid-1980s, you didn't need a clear night to notice the dazzling new stars behind the camera. Allen Daviau, ASC, earned his first Academy Award nomination for "E.T. – The Extraterrestrial;" Caleb Deschanel, ASC, had two nominations, "The Right Stuff" and "The Natural," and Don Peterman, ASC, scored with "Flashdance."

Allen Daviau grew up in the shadow of Hollywood. He became a photo hobbyist in high school, and was a regular at the Paramount, MGM and other studio lots. "I would just walk on trying to look like someone's son or nephew. It usually worked."

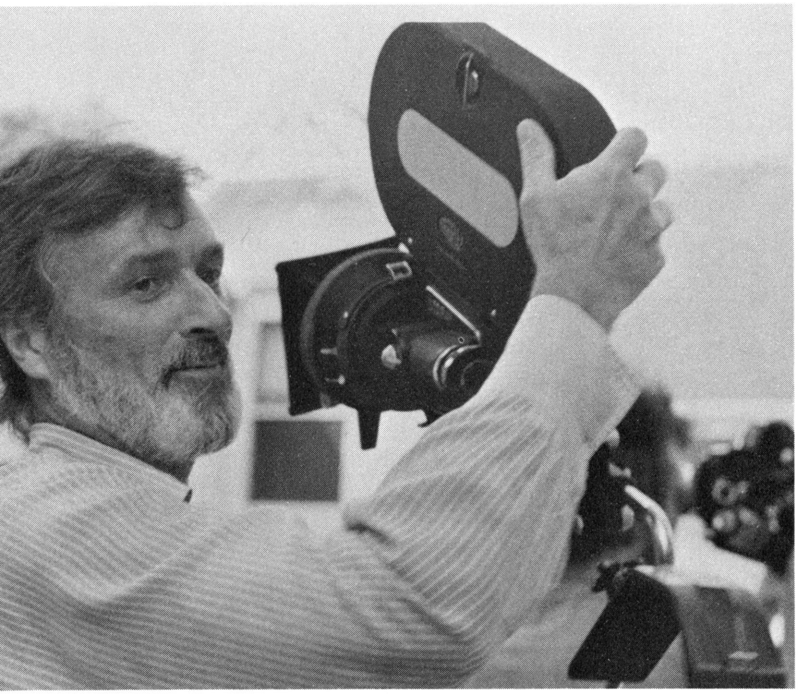
In his teen years, Daviau shot a series of 16mm films which a local radio station used to promote their disc jockeys. That led to assignments shooting short films for a Saturday night music show on local TV.

In 1968, Daviau shot the first 35mm film directed by an aspiring student filmmaker named Steven Spielberg. During the next 10 years, Daviau filmed many commercials and documentaries. Then, he did his first TV movie – "The Boy Who Drank Too Much."

Spielberg saw it and liked it, which led to "E.T." and the rest is history. He earned his second Academy Award nomination in 1985 for "The Color Purple."

Don Peterman grew up in Los Angeles. When he was in his teens, Roy Seawright, a family friend and innovative special effects cameraman, gave Peterman an enlarger. Peterman traces his interest in photography to that juncture.

Peterman started as a film loader at Hal Roach Studios. From there, he moved to an animation camera and an optical printer. Charles Wheeler, ASC, took him on as a camera operator on a 3-D feature film. Peterman was still in his 20s.



Conrad Hall,* above. *Douglas Trumbull* at *right.

Peterman worked in episodic television ("Lassie" – "We did 30 to 40 setups a day, and half of them were handheld.") before moving on to commercials as a director of photography.

"In those days you could go out and shoot film for a week, and it would be compressed into a 60 second spot." While you shot a high ratio of film, every frame was an integral part of a sophisticated message. "You lit and shot those commercials much the same way you would do fashion photography. We used a lot of soft light and 1000 mm lenses."

In 1974, he shot the pilot and early episodes for "The Night Stalker." Four years later, he shot his first feature, "When a Stranger Calls." His Academy Award nomination for "Flashdance" came ten years later. More recent films include "Splash" and "Cocoon."

Caleb Deschanel, ASC, was born in Philadelphia and spent his teen years in Maryland. He took a filmmaking course during his junior year at college. That led him to the Department of Cinema at USC in 1967.

Within a year, Deschanel was shooting educational films. When he was up for an AFI fellowship, Deschanel opted to work with Gordon Willis, ASC. When that plan didn't work, he financed his own apprenticeship with Willis.

Some 10 years after arriving in California, he shot "Black Stallion" which won the Los Angeles film critics award for cinematography. Next, he filmed "Being There," which earned similar acclaim from the New York film critics.

Deschanel received Oscar nominations for "The Right Stuff" in 1983 and "The Natural" in 1984.

Other Cinematographers Shine in the 1980s

Other cinematographers who earned their first Oscar nominations during the first half of the 1980s include Ralf Bode, ASC; Michael Chapman; James Crabe, ASC; Ghislain Cloquet, Miroslav Ondricek, Chris Menges, BSC; Ernest Day, BSC; Alex Thomson, BSC; Jost Vacano, BVK; Gordon Willis, ASC; John Seale, ASC; David Watkin; Takao Saito; Masaharu Ueda and Asakazu Nakai.

T-Grain Emulsion and Other Advances

Early in the 1980s, Kodak Research Laboratories reported on advances in emulsion technology that make it feasible to provide more speed, a greater degree of sharpness, and a finer grain structure.

An early dividend was T-Grain emulsion, which showed a change in the traditional design of the silver halide crystal to a flatter, tabular shape. The T-Grain crystal can absorb more light – making the film "faster." A flat, tabular-shaped crystal also makes it possible for film emulsion designers to create thinner layers, a characteristic that can improve sharpness since there is less dispersion of light.

Three New Films Enter the Scene

In 1985, Kodak announced three films incorporating T-Grain crystal and other new emulsion technology. Eastman color high speed negative film 7292 is a 16mm emulsion with an EI of 320 in tungsten light and 200 in daylight with a correcting filter. It replaced 7294. The new 16mm film features improved sharpness and grain characteristics. It is a low-light-sensitive 16mm companion for Eastman color negative film 7291.

An improved version of Eastman color intermediate film 5243/7243 featured enhancements in speed, grain and image sharpness. This was good news for labs, optical houses and video postproduction facilities.

Eastman color high speed SA negative film 5295 was designed to satisfy the unique requirements of the special visual effects artist. The new fast film is optimized for "blue screen" photography. The recommended exposure index is 400 in tungsten light and 250 in daylight. This gives the visual effects artist the latitude needed to create more realistic composites.

In addition, 5295 features extremely high-quality perforations. Optical houses, which need to maintain exceptionally tight tolerances during many passes through a printer, find this feature especially beneficial. If you start with an image the size of a postage stamp and are making an optical composite that will be enlarged 700 times on the screen, you need to be able to measure tolerances within parameters of one-tenth of a thousandth of an inch.

Shooting for New Horizons

Some sage once said "... the future is today, and it abounds with promise. There are no limitations except perhaps for the constraints of human imagination." Here are some thoughts on that theme:

For Future Reference:

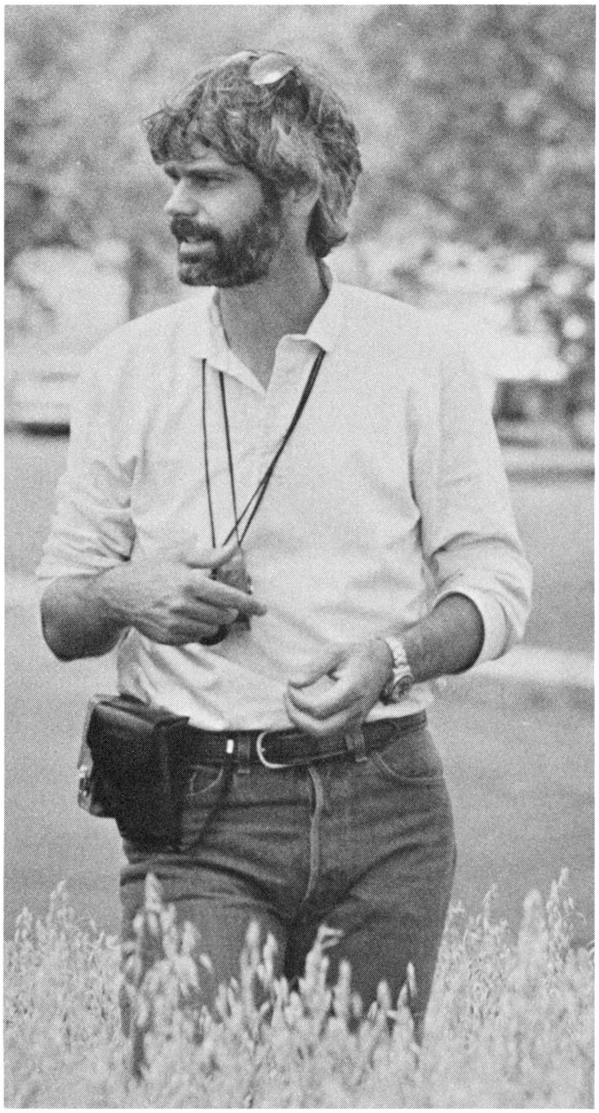
Douglas Trumbull has developed Showscan, a new concept in film origination and presentation. Showscan uses a 65 mm color negative which is exposed at the rate of 60 frames per second. The 70 mm prints are projected at 60 fps. Images are displayed two-and-a-half-times faster, four times brighter and four times larger than conventional projection.

Kodak technologists are working with Trumbull and Showscan Film Corporation to develop digital sound recording technology to complement the visual magic. The technology that emerges from this joint exploration on the frontiers of sound will be made available to the motion picture industry.

Advanced Cinema International reports that all of the technical development work necessary to implement Datakode magnetic control surface has been solved, and the equipment needed to start and finish a production is ready.

Over the long term, magnetic control surface technology could play an increasingly important part in the battle to reduce costs for noncreative aspects of filmmaking for theatrical, television and home video release. There are also promising developments in optical time-code technology for film. Both Arriflex and Aaton camera companies have developed optical time-code systems.

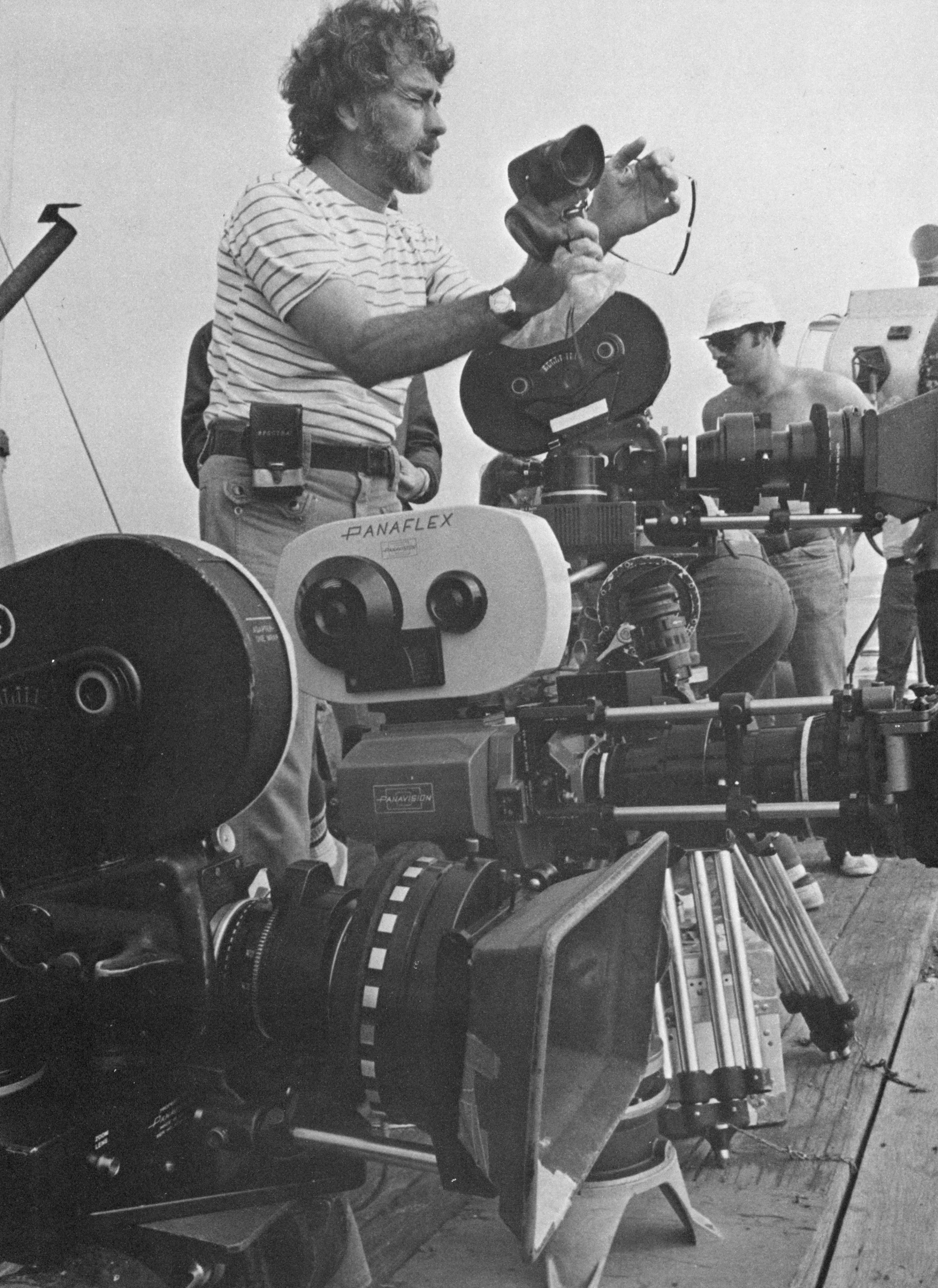
As with magnetic control surface, the long-term objective is to take advantage of future developments in microprocessor technology to trim expenditures of time and money during postproduction. These are not mutually exclusive uses of technology. For example, once optical time-code is recorded on negative, the data and images can be transferred to a magnetically coded intermediate film for postproduction.



Caleb Deschanel

At the end of 1985, some 30 million U.S. households owned Beta and VHS video cassette recorders. Sales and rentals of theatrical films to the home video market injected new sources of revenue into the industry. Kodak, which pioneered the introduction of 8mm video technology several years earlier, brought a new dimension to the home VCR arena in 1985 – an amazingly compact and portable VCR with a pocket-size cassette featuring digital stereo sound. The 8mm Kodak modular video system rivals the laser compact disc player for audio quality.

High-speed digital image enhancement is another use of technology that has been demonstrated by Kodak Research Laboratories. There already are some practical applications. For example,


PANAFLEX
PANAVISION

during the production of "2010," NASA imagery of the planet Jupiter was digitally enhanced by a Cray super computer to create the footage that special effects artist Richard Edlund required to make his stunning composites for the theatrical screen.

Hal Roach Studios is using a process called digital colorization to dress up black-and-white films for television and home video release. A director looks at the start of each scene and specifies colors for everything from skin tones to wardrobe and props. This data is entered into a computer that assigns the same colors to every frame in that scene. "Topper," Laurel and Hardy's "Way Out West" and Frank Capra's "It's a Wonderful Life" are among the films that have been colorized.

There are other possibilities: High-speed computers could be used to create special effects, to correct exposure problems, to produce superior prints for wide-screen projection, or to optimize films or tapes for video display.

The technology isn't that complex. What happens is that each film frame is scanned by a laser or other light-sensing device. The scanner literally "reads" the density of the image information on each of tens of thousands of pixels – or picture areas – which make up every frame.

"Cinematography is the art of subtracting rather than adding light . . ."

This digitized information is fed to a computer that processes it based upon its programming. The programming can instruct the computer to look for and eliminate grain, alter contrast or balance colors in a particular way. Image enhancement could be used to compensate for under- or overexposures or to create electronic opticals.

The interesting thing about future imaging technology is that high quality systems will continue to rely on the silver halide crystal for many years to come. It remains unchallenged in its ability to capture and store light. No foreseeable electronic system can touch it for broad tonal range, speed, and sharpness.

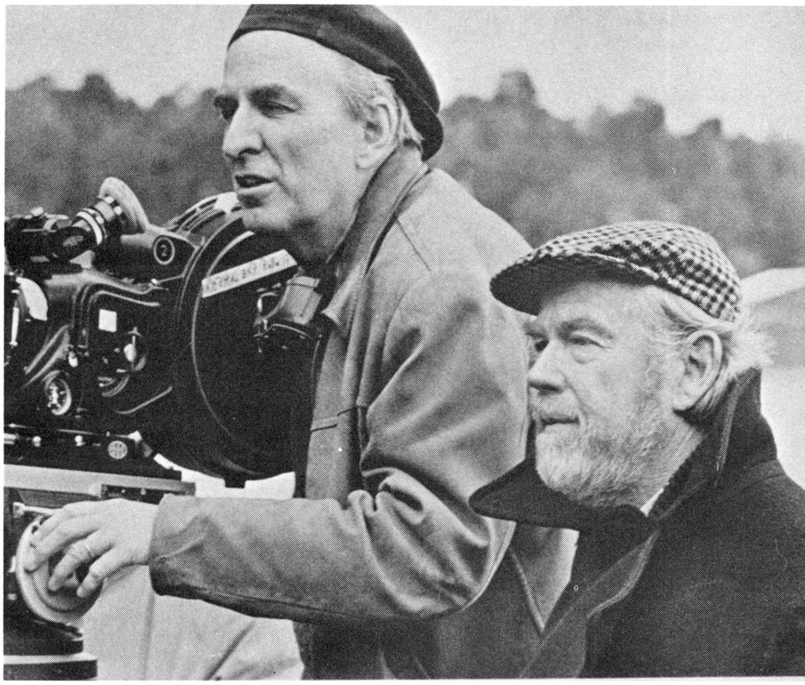
In the end, that is what photography is all about – the ability to capture light in subtle ways so that it represents images that record feelings and emotions as well as photographic representations.

Defining the Art of Cinematography

The art of cinematography is not easy to define. It is the difference between a stage play and a theatrical feature; reality and fantasy.

Give two talented cinematographers the same script, cast and setting, and you can bet there will be artistic differences in interpretation.

This is a topic worth considering. While cinematography is a very young artform, its impact upon society – the way that we see and view the world – has no parallel in history.



Opposite page: ***Bill Butler at sea, photographing multiple camera shots for*** **Jaws** ***(1975).*** **Above:** ***Sven Nyquist, in checkered cap, with director Ingmar Bergman.***

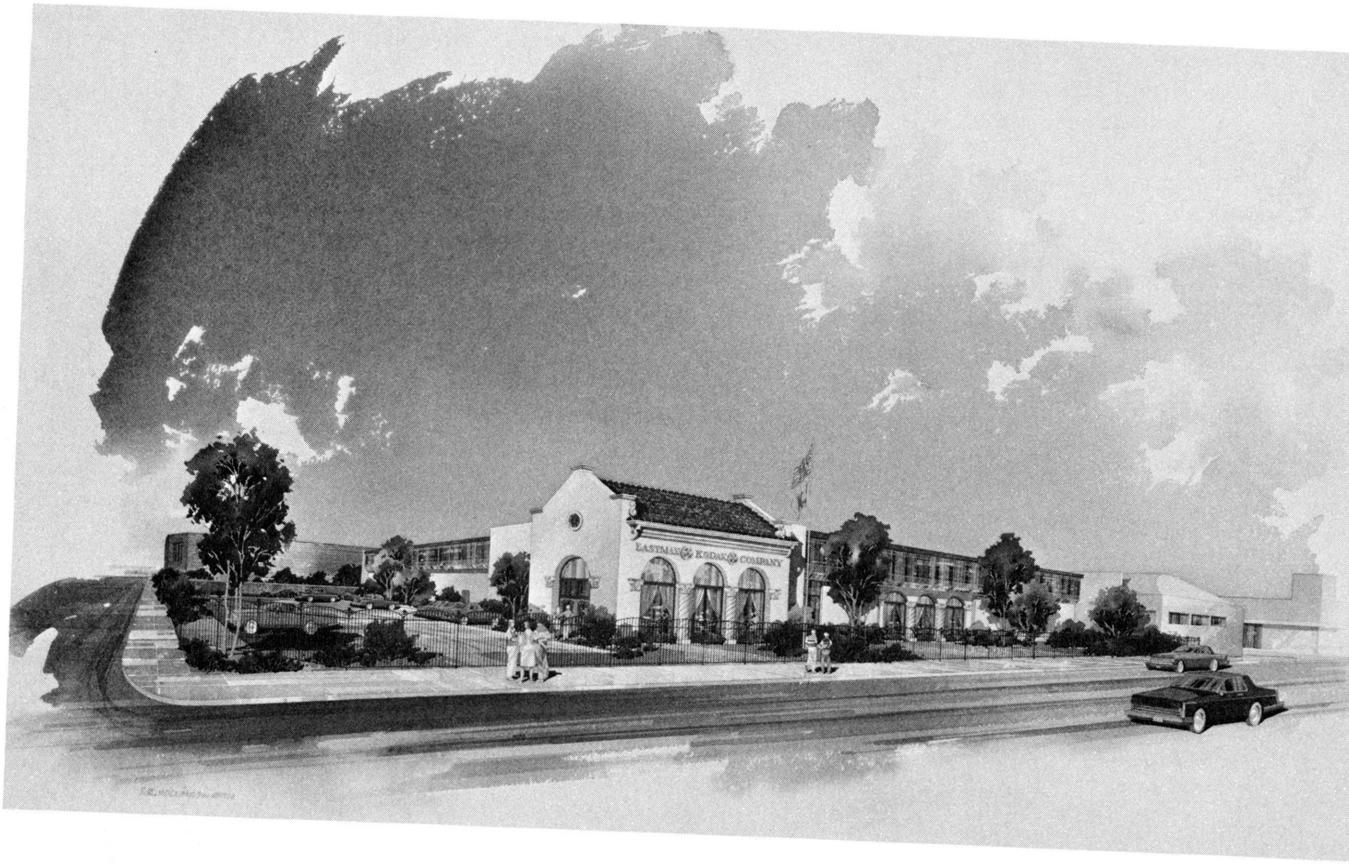
It is also important for us to understand our heritage, and the significance that it has for the future of our industry. The fact is, there is a little bit of Edwin Porter, Billy Bitzer, Karl Brown and Arthur Miller in every cinematographer who has ever framed an image. And, there will be a little of Bill Fraker, Vilmos Zsigmond and Allen Daviau in the next generation of artists behind the camera.

Samuel Goldwyn said that no one person makes a great film. It takes everyone working together. That alone makes filmmaking different from every other art. Can you imagine a group of Rembrandts daubing on the same painting, or several Rodins chipping away at the same marble?

Within that framework, cinematographers have developed their own unique culture. Part of it is the time-tested crew system which assures that ideas as well as techniques are passed from generation to generation. There is also that remarkable process which began back in 1913 when The Camera Club of New York and The Static Camera Club of America first met to exchange ideas, and to mutually explore how their art could be improved.

That led to the organization of the American Society of Cinematographers six year later. ASC president Stanley Cortez says it best: "I think we have something to say, like a poet, or composer or painter has something to say . . . The only difference is that the cameraman's media is the interpretation of light and shadows."

(Kodak, Eastman, Super-XX, Plus-X, Kodachrome, 5247, Tri-X, 4-X, 5294, 5243, 7291, 7292, Datakode and T-Grain are trademarks.)



Epilogue

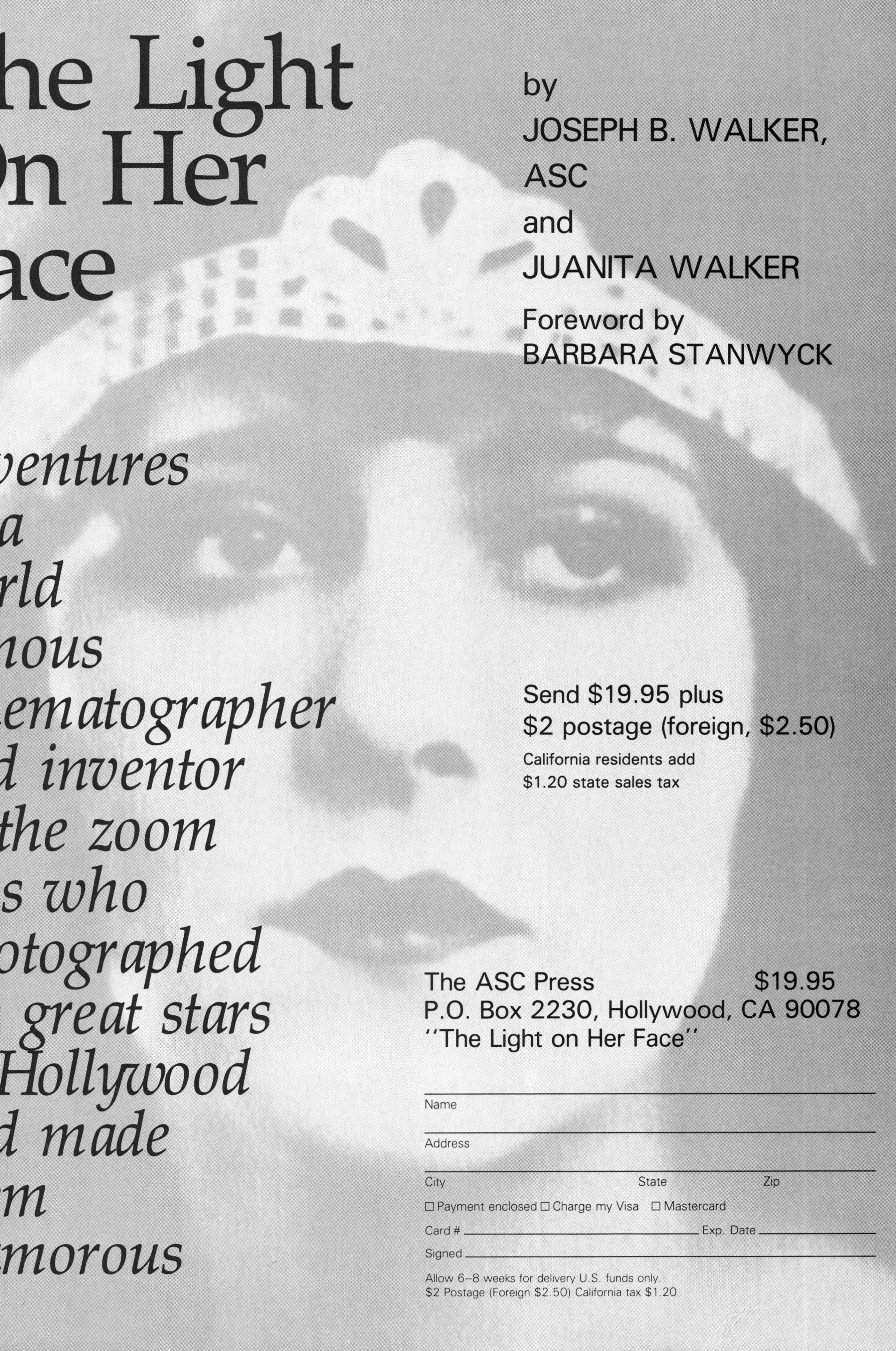
It would take a cast of thousands for us to present a complete portrait of all of the cinematographers who have played important roles in the evolution of the art of the moving image. Because of limitations of time and space, we have presented here only a series of word snapshots focused on a number of directors of photography who stand as proxies for their peers – past, present and future.

It is the art form which we are saluting, and the body of cinematographers who have made contributions to it as a whole.

If I could leave you with one other thought, it would be that just as all cinematographers, in their souls, carry a bit of Edwin Porter and Billy Bitzer, the people at our company have their own heritage, which dates back to George Eastman.

We have learned from our past that '. . . the things that are done best are done for the love of doing.'

—John M. McDonough, Manager
Western Region
Motion Picture & Audiovisual Products Division
Eastman Kodak Company



The Light On Her Face

by
JOSEPH B. WALKER, ASC
and
JUANITA WALKER

Foreword by
BARBARA STANWYCK

the adventures of a world famous cinematographer and inventor of the zoom lens who photographed the great stars of Hollywood and made them glamorous

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The true wisdom of the sage lies in his capacity to reverse the terms of standard beliefs.

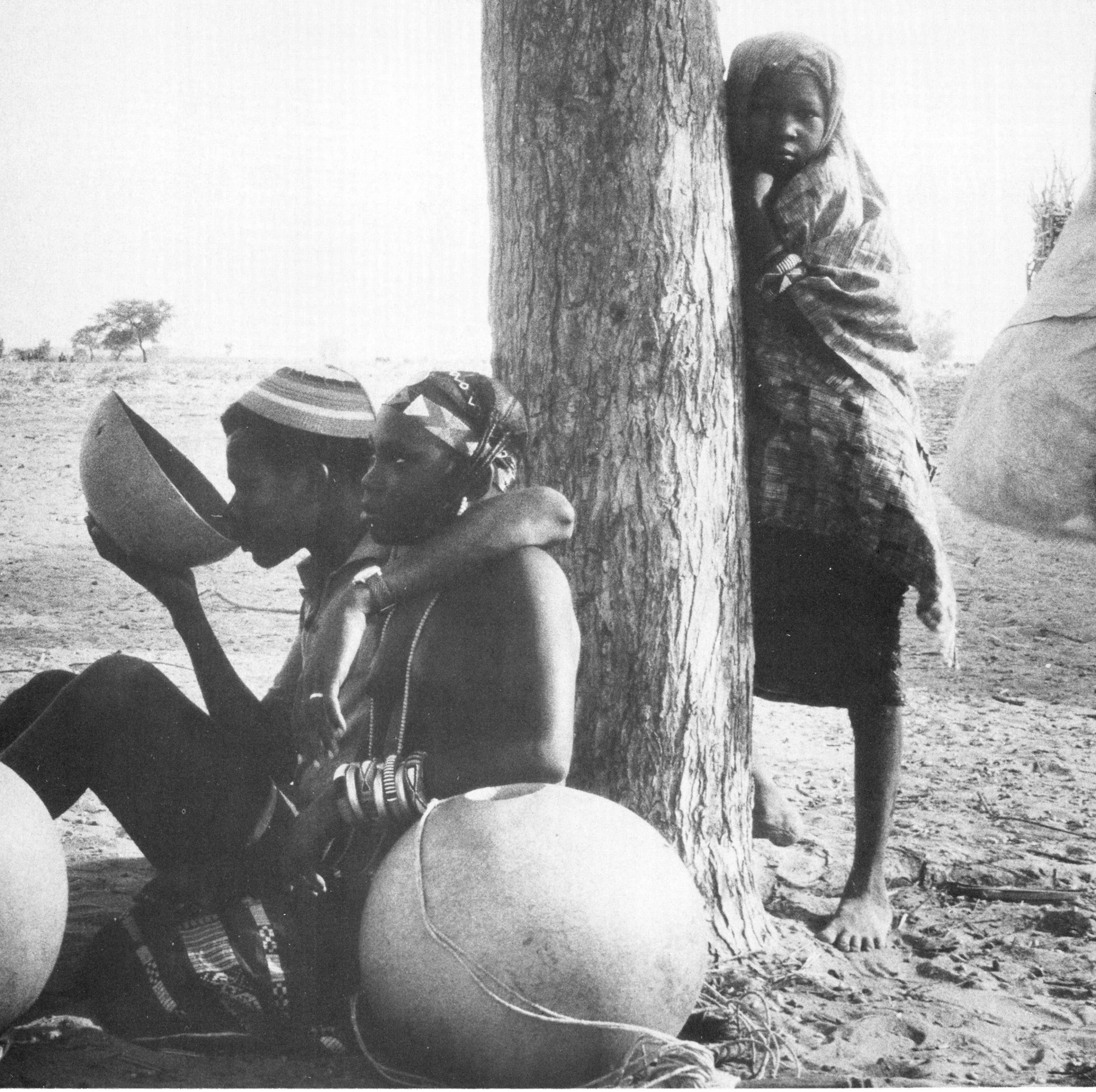
Example 1: Love is fleeting, passion lasts for ever.

Example 2: If video is your predilection and your heart is set on High Definition TV, shoot your original images on Super 16 or 35 mm negative[1] now: they'll be waiting for you in a hundred years[2].
And if you are dedicated to film, don't let the celluloid tie you down: assemble your productions on the new computer assisted video editing equipment.

Marc H. Piault

The steps of the optimum shooting-to-screen process will go like this:
— original film shot in Super 16 (or 35) with SMPTE coded cameras[3].
— direct transfer of the negative to video workprint; the original film timecode is transferred in the san

— off-line video editing, with automatic sound synchronisati
timecoded as well), on a computerized table such as the one
laser video-disc (Editdroid).
— automatic conforming of the original negative via the time
by the editing table's computer memory.
— either 35 mm release print, or transfer to HDTV for br



on[4].

dio is SMPTE
Montage Corp., or on

s of each cut provided

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[1] The dynamic range, sensitivity, and resolution of recent Kodak and Fuji rawstocks are superior to that of HD video.

[2] Will you be around then?

[3] Each and every Aaton XTR is equipped with Film Data Track for SMPTE timecoding. Panavision uses the same system in Panaflex.

[4] Du Art (New York), Ruxton (Los Angeles), One Pass (San Francisco), Telcipro (Paris), Video Bureau (London) have telecines equipped with Aaton Film Data Track readers.

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Straight Shooting for *Heartburn*

by David Jon Wiener

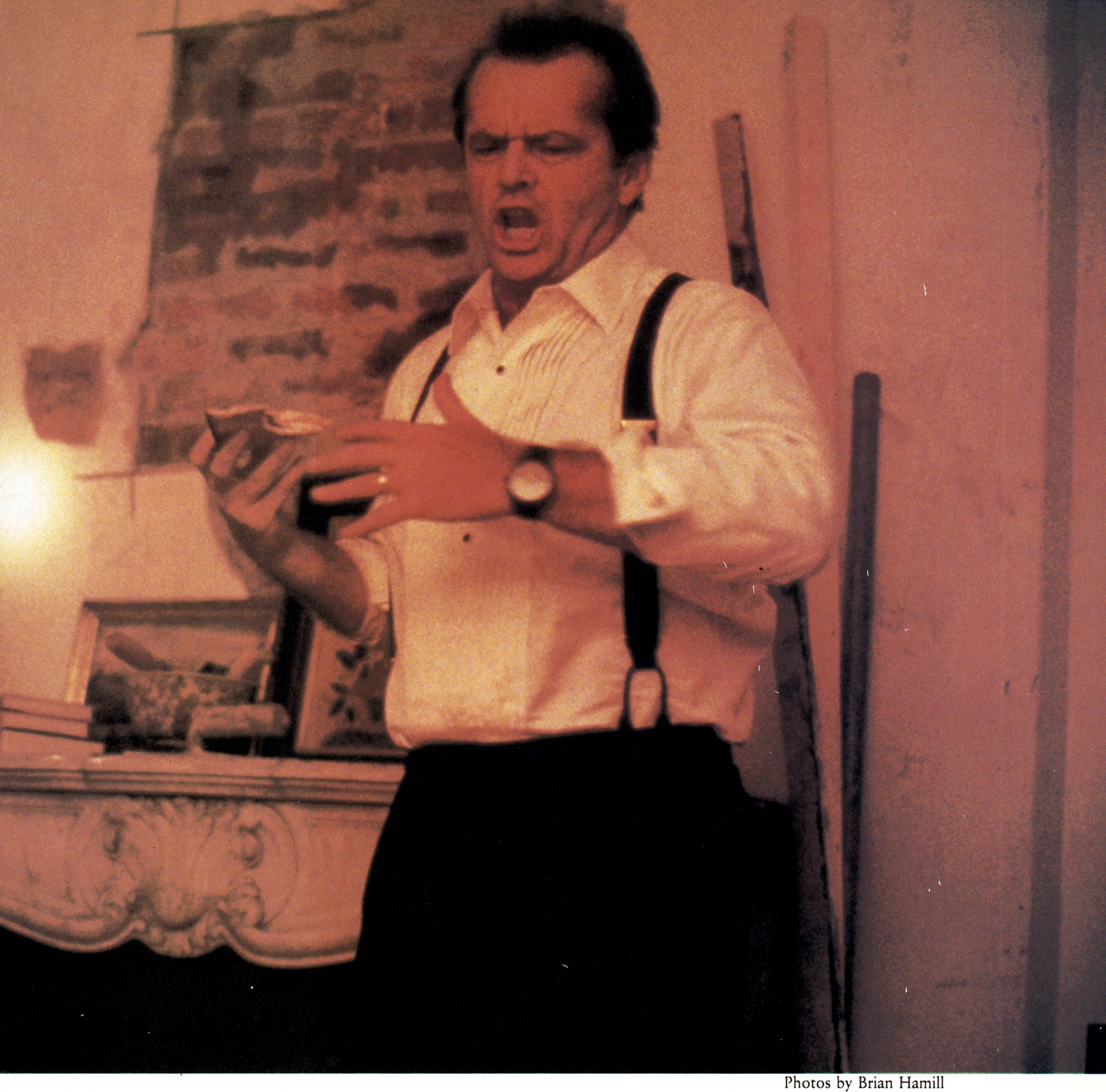
"Technical matters," Nestor Almendros says, "are really quite secondary in filmmaking. Far more important is taste and having a 'good eye.' "

The tackle and baggage of movie-making sometimes distracts filmmakers from their real task – to make a piece of theater strong enough to stand up to the scrutiny of those who are unimpressed (if sometimes cowed) by electronics, transport mechanisms and large investments; that mass of individuals known as the audience.

Almendros cites precious few engineering developments since the 1930s with long-term beneficial effects, a sentiment he put in (pardon the expression) black and white in his book, "A Man With A Camera." Of these few developments, two figured prominently during the shooting of Mike Nichols' *Heartburn,* the thinly-veiled story of the failed marriage of Nora Ephron and Carl (Watergate) Bernstein.

"The invention of fast film has affected style," Almendros says. "In the old days, film was slower so you had less depth of field. This meant that the actors had to be on the same plane. Now the actors can move in any direction and still be in focus.

"After I've lit the set by eye, I take a reflected reading from my hand, measuring the key light.



Photos by Brian Hamill

The film stock we used was often the Kodak 5294; it's 400 ASA and is well-suited to the kind of style Mike Nichols has; it provides a lot of depth of field. Without overlighting, we could get f5.6 or even f8 very easily, allowing everyone on the set to be in sharp focus."

The second technical advantage Almendros had was a video-monitoring system. "This allowed us to do complicated camera movements while the actors moved within the frame. You could play back every take as well as watch them while they were being filmed on a black-and-white monitor. We gave Danny Lerner, the camera operator, some indications and we could tell him to make corrections by watching this monitor. Both Mike Nichols and I would sometimes prefer to watch the video monitor rather than the live actors in front of us."

"For someone like me, who was used to operating the camera, being away from the eyepiece can be frustrating. But that frustration has now been completely removed by the video assist. You can see what's going on even better than through the viewfinder because you have distance; any defect, any little mistakes show up very clearly on the monitor.

"I did sometimes have earphones and a microphone so I

Streep steams open a bill.* Below: *She's in the kitchen making key lime pie.

could talk to Danny, something like a TV studio. But I spoke very seldom because we've worked together so often, he sort of guesses my thoughts.

"There is great simplicity and clarity in the camera moves," Almendros points out. "We wanted things to be seen very simply and in a very straightforward manner; we wanted the audience to be close to the actors."

The shots last a long time; the director lets the audience choose which actors to look at, instead of chopping the scenes into the short close-ups often used on television.

"It's what the French call plan-sequence, and there's a lot of it in *Heartburn,*" Almendros says. "A plan-sequence (a single shot comprising several camera moves depicting a complete scene) can be made only by very professional actors; their timing must be perfect. Otherwise, the scene will drag.

"We shot from the waist up or in a 'cowboy shot,' from the knees up, so you can watch the actors move around. I believe the best scenes in the movie are with Nicholson and Streep together and you can watch them acting simultaneously. When there are husband-and-wife fights, it's good to see the two people at the same time. It's like dance choreography; they *are* choreographed but, at the same time, it's not obvious to the audience. It looks totally natural, like the 'real' cinema of Howard Hawks or Leo McCarey, when they only cut when they *had* to cut."

Location shooting, another development of the relatively recent past, has its good and bad sides. The blessings are increased realism and credibility. The curses include subtle threats to performances from the real world.

"Long dialogue scenes," Almendros says, "can be difficult when filming by natural light. And that's the great advantage of working in a studio. When people used to say interesting things, they built studios and sound stages. Had those scenes been filmed on location, they would have been in trouble. The light changes and [crews and actors] are rushed. In a studio, we are more relaxed."

Because some of the crucial scenes are set in the back yard of Nicholson and Streep's home, production designer Tony Walton was forced to do some messing around with Mother Nature.

"There was a real back yard to which we had access in Washington DC," says Almendros. "It was recreated by Tony in a studio in New York. One of the longest scenes takes place in the back yard, so Mike Nichols decided that it would be better to do it in the studio. Shooting it on location, as I say, would have a big problem. We would have had to interrupt the shooting and continue the next day for light matching. This breaks

Nicholson and Streep on first date.

up the concentration of the actors. In the studio, we could do an entire scene in one day with no problem.

"Tony Walton is extraordinary, but it's not possible to make a replica exactly like the original. The bad thing about a garden in a studio is that nothing moves; everything is terribly still. So we placed several electric fans here and there, just to give a subliminal feeling of reality, just a shivering of the leaves.

"We overexposed the back yard set a little bit and the actors were backlit, so the background was slightly burnt out. The actors sometimes go from the back yard into the house while the camera dollies with them, and the feeling that the interior is darker helps the illusion of truth. We overexposed by probably one stop in the back yard.

"Instead of balancing the interior and exterior, we left the interior darker on purpose, about one and a half stops – that's about half the difference between actual interior and exterior light levels."

The iris muscle of the eye slowly opens in darkness, accommodating to the shift in ambient light; Almendros decided to mimic this biological mechanism.

"The camera assistant changed the lens stop from, say, 5.6 to 2.8 in 15 or 20 seconds," he explains. "The scenes were long enough to allow us to do this, with the actors moving and speaking all the time. So it was not an abrupt change.

"As the f stop opens, the exterior you see in the background tends to burn out a bit, which is what happens in reality. If that's not carefully done, it's just awful, but when it's well done, it's superb."

Almendros has changed f stops in mid-scene in other films, but *Heartburn* is the first time he's used the trick to any great extent.

"I have more confidence with the technique now," he says, "although it's very risky. Sometimes you'll get one take that's good and another that isn't. There was a scene at the end of *Sophie's Choice* where it didn't work at all; you can tell someone is touching the lens."

There are also similarities between *Heartburn* and *Kramer vs. Kramer,* another Almendros picture. Both are big-city stories. But this current project has much more in common with *My Night at Maud's,* a 1969 feature he filmed for Eric Rohmer in Clermont-Ferrand, France.

"That movie also had two or three people in the frame at the same time and long, intelligent dialogue," Almendros says. "*Heartburn* is also contemporary, it's a comedy with dramatic moments. It happens in places which are not exceptional – it's everyday life. So the look had to be very straightforward.

"But shooting in modern cities is difficult because we're surrounded by ugliness. Colors don't match, architectural styles clash, and colors on the street tend to be so shrill, you don't look at the actors. The colors in a city steal the show, so we changed some things when we shot on the street. We shot in front of a place that had a white awning, for example, and had to change it to a deeper color because it was too bright.

"Very often, you tone down – very seldom do you tone up. The actors are what count, especially in this kind of movie. Tony Walton did the sets in very

Group therapy from left, Streep, Maurine Stapleton, Christian Clemenson, Rick Thomas and Mercedes Ruehl. **Bottom Right:** *Backyard scene with Richard Masur, Streep and Stockard Channing.*

muted, harmonious colors so the actors would stand out.

"I scouted some locations with Tony. Other times, once they'd found a location, I was invited to take a look so we could discuss any changes.

"There is a scene in the Palm restaurant in Washington, where the walls are hung with caricatures of politicians. But large areas had no pictures at all. There were to be several people seated around the table, so I thought we'd better have caricatures everywhere for purposes of matching. So we had additional caricatures drawn and placed in the empty spaces. They were out of focus anyway, they were the members of the crew and, if you look closely, I'm in one of them! They gave me that caricature after the movie."

A room in an aging skyscraper in New York was used for a scene set in the early morning.(The scene was edited out of the final release.)

"Meryl wakes up in her father's house after a restless night," Almendros remembers. "The curtains are old and don't close properly – so there's a shaft of light cutting through the darkness, falling on Meryl. It's very nice."

This room was four or five stories up. To achieve the sunlight effect, one HMI light was cantilevered off the roof and directed towards the curtained window. Inside, light was bounced off the ceiling to reduce the gloom.

Equal care was taken in the studio, where two stories of the Washington house were reconstructed.

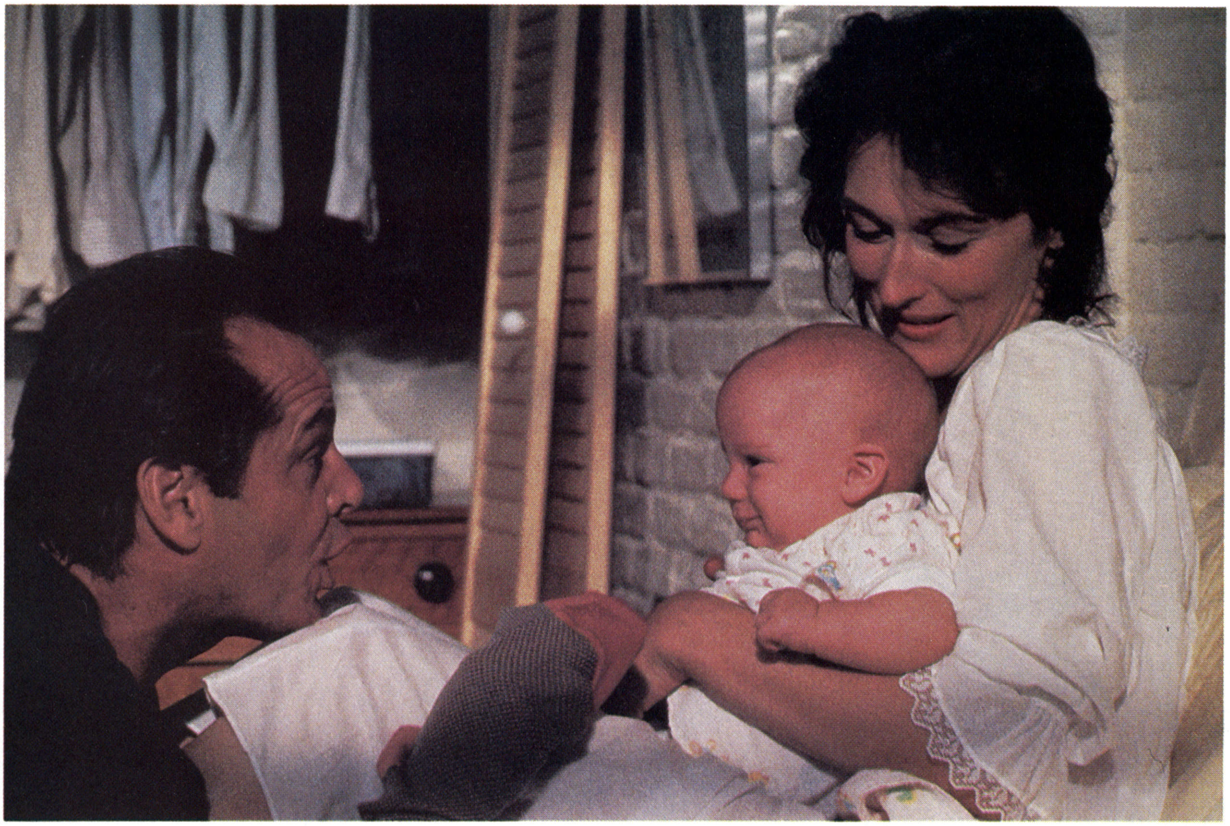
"In the story, the house is never really finished," Almendros says. "They're remodeling it through the whole movie. So, we shot 'backwards;' we started with the house nearly finished and then deteriorated it little by little. We wound up our filming at the earliest part of the story.

"Interiors were done at my favorite studio, Camera Stages in Manhattan. They're my favorite because they're convenient – I can walk there or take the subway. There's a kind of a Hollywood in midtown Manhattan; you can walk to the studio then go the Technicolor lab screening room just round the corner. If you need something – a prop, a lampshade, an antique – you just go to a corner store and buy it."

Before taking on any assignment, Almendros first considers the director and how he might contribute to the collaboration.

"If I like the director's work," he says, "then I'd like to do the movie – the script comes second. Mike Nichols is one of the directors I admire most in America." Almendros viewed cassettes of Nichols' films, stopping the action and studying scenes several times to analyze the work. "Cinematographers are there to help the director," he explains, "and the more you've seen of his work, the more help you can be. Mike Nichols works close to my own way, so I thought that this could be a good collaboration. I was then given Nora Ephron's book and the script and we started discussions.

"I was lucky to be invited to the rehearsals with the actors – not on the set, just in a rehearsal room. This was without props or anything, just the actors reading. They were already sort of unconsciously blocking the scenes. Sometimes, they might



Main characters with Baby Annie

stand up and move around, you see?"

Makeup and hairdressing tests followed. Having worked with Meryl Streep three times before, Almendros now had a chance to film her as a fourth character.

"She had to look like a New Yorker," he says, "a modern and sensitive woman. She's a very active person in *Heartburn,* totally different from *Sophie's Choice* or *Still of the Night,* which were more romantic. She had to be dynamic and strong in the movie. She also became a brunette, somehow vaguely like Nora Ephron in life."

Once shooting began, it simmered along nicely, with Almendros trying to work a bit faster each day.

"This is a good attitude, especially for comedy," he says. "Because of the plan-sequence, we didn't have to do many setups. We finished early every day, which is unusual in American cinema where people work endless hours.

"That's another amazing thing about Mike Nichols; when he's got it, he's got it. If he gets what he wants on the second take, he'll say, 'OK, let's go home, it's finished.' He will not go on insisting that it be shot from thousands of different angles."

Panavision equipment was used with a zoom lens, although focal length was very seldom changed during a take.

"We used the focal lengths closest to the human eye," Almendros says, "40, 50 and 35 millimeter. The zoom lens was used like a prime lens. And, basically, we used single-source lighting for interior scenes. But this is a contemporary story set in a big city; unlike earlier eras, people now have several light sources in their homes.

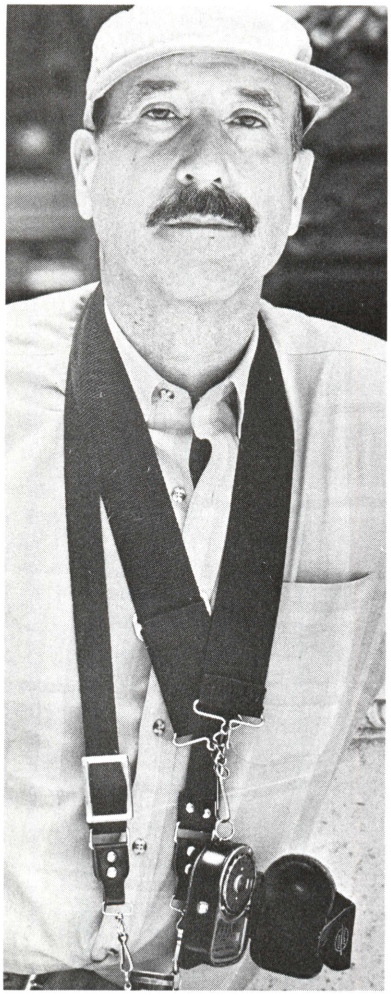
"If there were several lights in a scene, the illumination would come from those places. But since the house is never finished, the light is also never finished – which gave me the opportunity to use the one-light system I like so much." (Almendros' Oscar-winning photography in *Days of Heaven* is a good example of his period lighting.)

"In some scenes, there would be only a bare bulb and that justified the single-source lighting. Or, the light might come only from the outside, through the windows. We had a scene where moonlight came through the windows and for that we used a single HMI light. HMI is a bit bluish, like daylight, and with no fill it doubled for moonlight.

"For the exteriors, instead of using fill lights, I used Gryflon – a white plastic sheet used to cover hay on farms. We put this over metal frames and these can be quite huge, up to four square meters. Several men have to hold them when the wind comes up. It gives a very nice fill, just as if the wall of a large, white house were reflecting daylight onto the scene.

"The large size of the reflector makes the light uniform and even. It's not spotty or mottled. Back when the old metal reflectors were used, you could see the actors move in and out of the zone of light."

Mercifully, most scenes were interiors; houses, apartments,



Everybody breaks up, including director Mike Nichols (kneeling).
Right:
Nestor Almendros, ASC

a hair salon, restaurants, and even a grocery store.

"The grocery store was illuminated by the fluorescent lights," Almendros recalls. "There is no problem with this anymore; we simply use bulbs which emit a daylight spectrum. We put an 85 filter in the camera just as if we were shooting outdoors. You can use any kind of daylight for fill; incandescents with a bluish filter or a bank of fluorescent lights mounted on a stand. These are very good because they don't produce much heat.

"Extreme heat can kill performances, so this is very important to the actors. Back when tremendous amounts of illumination were needed to gain depth of field (because of slow emulsions), the actors were bothered. If your light is close to what there really is in life, it helps the actors believe what they're doing. For *Hearburn,* we used the Kodak 5294, the 400 ASA negative stock, and there was absolutely no diffusion in the lenses; it was shot very simply.

"We did have flashback concerning the Streep character's mother which involved special fog effects done in-camera. But the director decided against using them in the final cut. I'm glad they weren't used because they weren't really in my line.

"There was also nothing special in the lab work. We asked for regular processing. The negative was developed in New York and the prints made in California. Jack Garcia did the timing; he worked with me on *Still of the Night.*

"I like to work with people I know well. There's lots of discussion of ideas among the crew but there is also a lot of 'not talking.' We have worked so much together we can tell what we mean by a wink of the eye – we start to read each other's minds almost."

Almendros was, happily, able to stay with *Heartburn* all the way through post-production.

"That's because I have decided to work on fewer pictures," he points out. "Instead of doing four or five a year, I now do only one or two and *only* if I like the projects. And I follow them from A to Z."

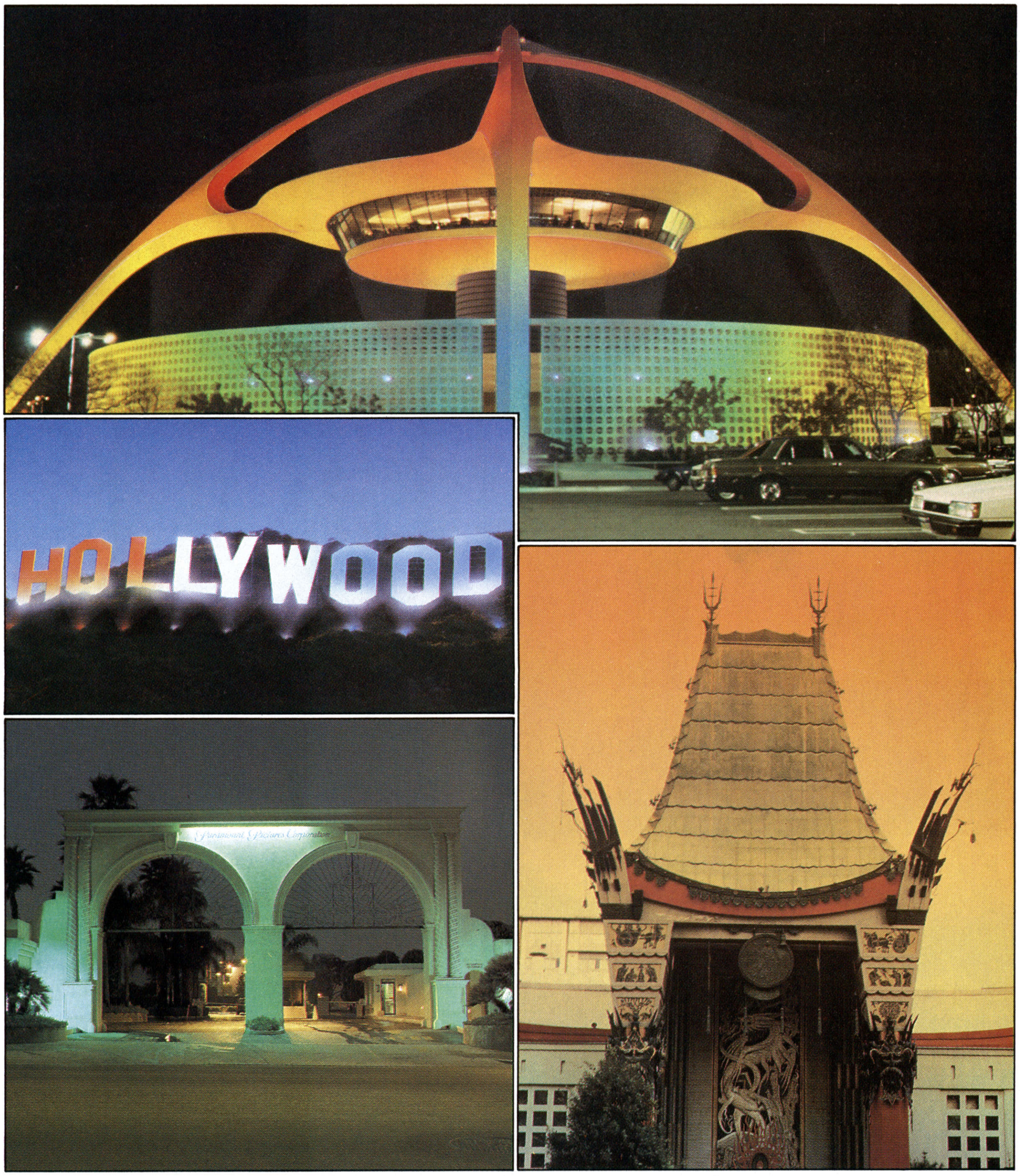
Fans of *Amadeus* will be pleasantly surprised to note the premier screen appearance of a novice actor of foreign extraction.

"The film is the acting debut of Milos Forman," Almendros says. "He plays a Yugoslav. So we had two directors on the set, but only one was acting. He had quite an important role, several days of filming, and he was excellent. I asked Mike Nichols at the end, 'How did you know he could act?' And he told me, '*Every* director can act!' "

Looking back on the experience, Almendros cites *Heartburn* as one of the happiest of his 43 feature film assignments.

"Jack Nicholson and Meryl and the director and, of course, Nora Ephron, were all very funny. So it was a comedy with lots of feelings both inside and outside; it was a blessed movie, it really was." △

David Jon Wiener is a San Diego writer who has contributed to American Cinematographer on many occasions.



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Photos by Eric Lasher and Michael Middleton

The All New *Invaders From Mars*

A Golan-Globus Production
Directed by Tobe Hooper
Director of photography,
Daniel Pearl
Director of special visual effects,
John Dykstra

by George Turner

For years director Tobe Hooper dreamed of making his own version of the 1953 film, *Invaders From Mars*. "The original burned holes in my brain," Hooper said recently on the set of his all-new *Invaders*.

The old edition was designed and directed by William Cameron Menzies and photographed by John Seitz, ASC, in two-color Cinecolor. Its tiny budget – about $60,000 – didn't stand in the way of quality, which was derived from imagination and artistry. "Our picture is dedicated to Menzies – I tried to make it an *hommage*," Hooper added months after principal photography wrapped. "The story changes very little, the only real difference is that it's been made contemporary. It's an "A" picture version, updated, of what was: spaceship lands behind sand hill, kid sees it, nobody believes him, and so on. I don't think we've missed what was good about the original; had we gone out on a tangent it wouldn't have been right, but we ground some originality into it."

Looking back on the project, Hooper noted:

"Three months preparation, a $12 million budget, 105 day shoot, past 14 weeks in post-production. It's been close to a year, plus a couple of years of finding a place for it, deal making, pre-production. It was my first project after *Poltergeist*. It followed me around, wound up with my agent at ICM, and then when I went to ICM it became a part of my deal."

Hooper's close collaborators from the beginning were two directors of photography: Daniel Pearl, who was in charge of principal photography, and John Dykstra, director of special visual effects.

Shooting began on July 10, 1985, at Malibu State Park utilizing a house built by RKO in 1947 for *Mr. Blandings Builds His Dream House.* Meantime, a replica of the house and the forested hill adjacent to it were constructed on a sound stage at Hollywood Center Studios, where the night scenes were scheduled. Production designer Les Dilley, Oscar winner for *Star Wars* and *Raiders of the Lost Ark,* also designed a fanciful space ship for the Martians. "There are no dials and related hardware," Dilley emphasized. "The 'tentacled design theme is repeated all over the ship, which is tied directly to the tentacled Supreme Intelligence, creating an over-all 'bio-morphic' organic concept."

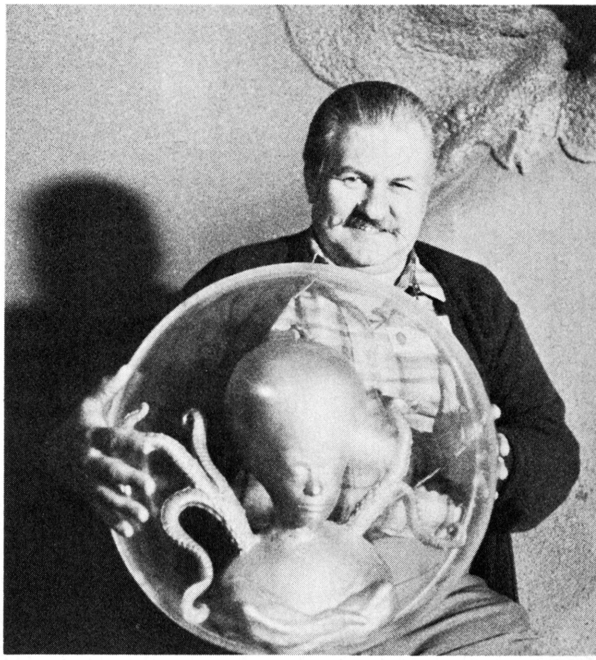
The principal interiors were built in a converted sea-plane hangar on Terminal Island in Long Beach. It once housed Howard Hughes' gigantic flying ship, the Spruce Goose, which made its only flight in 1947. The spaceship interior and its maze of tunnels required an area of over 30,000 square feet. The spaceship alone measured 150 feet long, 75 feet wide and 45 feet high. A sandpit location was recreated in the hangar to tie in with shots of the original in Simi Valley. Eagle Rock High School – renamed Menzies Public School for the film – was an important location.

The dream-like story begins when 11-year-old David (Hunter Carson) wakes one stormy night and sees an alien space craft landing in the hills near his house. Over the next few days, he tries to convince everyone around him of the growing terror. Meantime, more and more of the disbelieving adults are being converted into alien agents via an implant put into the backs of their necks.

"I tried to keep it simple and straightforward," Hooper said. The Marines pitched in and helped a lot with cooperation, not to mention manpower and equipment. It was good to work with Daniel again, a really great lighting cameraman. And Dykstra is tops."

Pearl, who was born in the Bronx, became an official cinematographer for the State of Texas while studying at the University of Texas in Austin. At the age of 23 he was director of photography for one of the state's more notorious exports, *Texas Chain Saw Massacre,* directed by his friend, Tobe Hooper, about 12 years ago. Since then, Pearl has photographed 18 feature productions, more than 170 rock videos (in the course of which he won every award given in this field), plus short films and commercials.

"Somebody once asked me what was the hardest part of making *Invaders,*" Pearl mused. "I said that for me it was recording the 'magic' and making it look like *magic.* Phil Corey and his physical effects guys had their hands full with all kinds of things going all the time. And we had Phil Winston and his creature effects team moving all the monsters. Everybody had his needs and problems and demands – including John Dykstra and his visual effects crew. I figured it was my job to cooperate. It was fortunate that I was put together with a bunch of guys who were tops in their field. Each of them brought first class material to the set and I respected each person; we had a very good relationship.

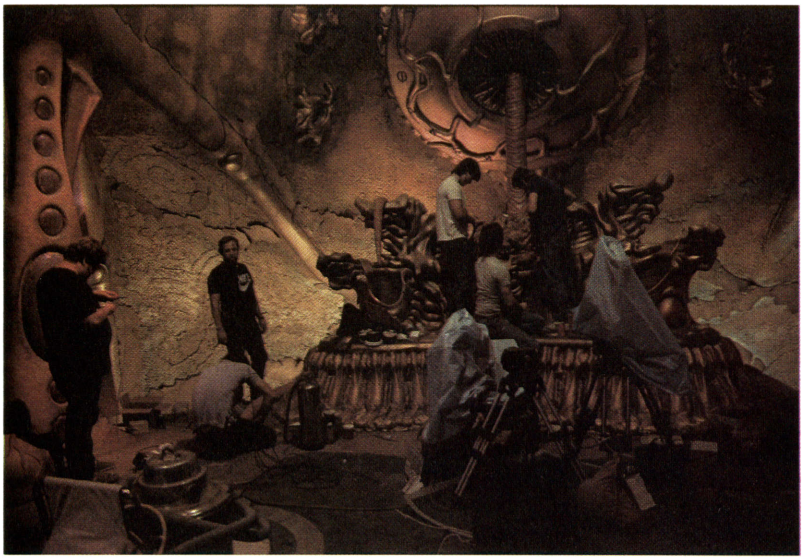


Bob Burns holds the Supreme Intelligence from the 1953 film, a key artifact in his Hollywood collection. The prop appears briefly in the 1986 version.* Opposite page: *Hunter Carson and Karen Black meet a Martian machine.

"Tobe wanted me to give it a rock video look and feel, as much as I could translate that to the big screen. A lot of those are shot on film but edited on video and he wanted to bring video editing technique to the screen, which we did. The two tools I was using extensively in rock videos that are really at the bottom of the *Invaders* look were the Louma Crane and robot-controlled lights called Vari-Lites®. We put both to good use and it's very special looking because of it. They're both really hi-tech devices and they worked well for us together. This is the first time the Vari-Lites have been used in a feature film."

The Louma crane incorporates a remotely controlled pan and tilt camera mounting system, operated from a command console equipped with a TV monitor. A second closed circuit TV camera relays lens calibration information to the focus assistant, who can control aperture, focus and zoom remotely. It has an arm length of 26 feet.

"John Marie Lavalou (co-inventor with Alain Masserion of

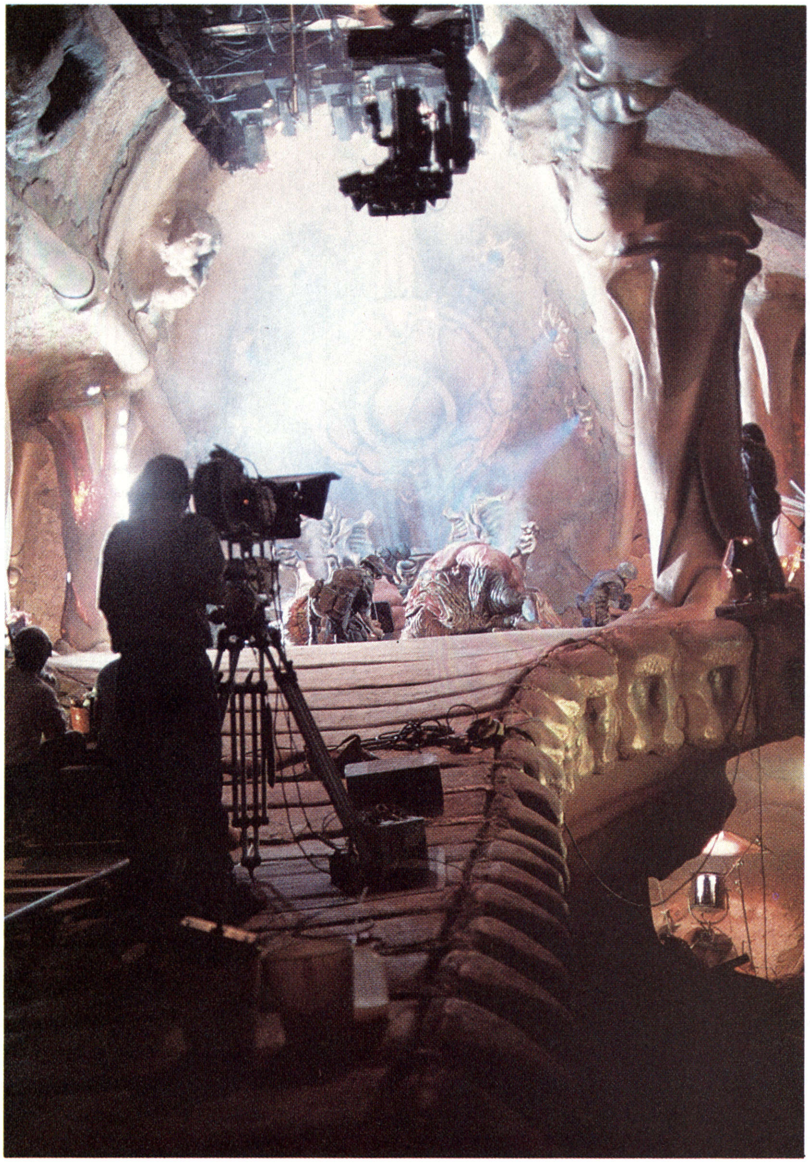


Above: ***Vari-Lites create strange color patterns in the Supreme Intelligence's throne room.*** **Right:** ***Technicians set up the Supreme Intelligence apparatus.***

the Louma) and I have worked together for about three years, but Tobe had never used the Louma before," Pearl said. "It has the ability to put the camera about anyplace and we used it for some rather elaborate long takes. There's a scene where Hunter is going through a fence and into a gully which leads into the space ship. We made what appears to be a tracking shot shooting over his shoulder and going right through the fence with him. We did some big master shots inside the space ship, which is about 85% closed off. So little was open that it was difficult to light, but just to work in such a set was fantastic.

"It seemed to me that the only way to show the place off would be in a big, elaborate move looking this way and that, panning around and winding up and down – it had to be seen all in one shot. So we used the Louma when the boy makes his entrance to pick him up and show off the environment in one big shot. The Louma is great for that: it flies over things; it can get around corners and make very tight moves. Because of the child labor laws, we could only have Hunter on the set for four hours a day. That's not much when you have a lot of special effects where anything can go wrong and cost you 45 minutes or an hour, and we had liquid nitrogen, steam, smoke, flashbulbs, and all sorts of equipment going. So we really fell into a style of shooting long, involved masters because it gave us freedom to use a double for Hunter to rehearse and block with. We'd get the shots all set, spending two or three hours, then send to his house for Hunter and shoot it. It took considerable time to set up, but our working procedure allowed for that. We'd make several takes of the complex shots and everything would fall into sync – the crane would do the right thing, the boy would hit it okay, and we'd have it. It was a style the Louma was perfect for."

The Louma also was used to advantage in scenes involving the vortex which sucks victims down into a sand pit. "It was quite an elaborate device, driven by a gasoline truck engine," Pearl revealed. "It was rather like the back end of a cement mixer, only turning the opposite way so it would suck things down rather than push them out. They actually built it on a real sand pit initially, but later moved it to the stage where we did most of the work. It would allow two people at a time to be dragged down, with a team of special effects men down below to dig them out right away, before they suffocated. There was no way to take air down there, they just had to hold their breath until the rescue team got to them. Not a pleasant experience according to the people who were sent down, but pretty spectacular on film. The Louma gave us the freedom to be at ground level with it and then go up over the top as the people were sucked down to give us a good vantage point looking straight down.



Cameras at eye level and on Louma crane cover action sequence in the throne room.

"After we'd been doing those long scenes for four or five days, Tobe began to worry. He said, 'We're making up some really nice shots and they're not heavy-handed – you don't feel too much that they're moving just for the sake of movement – but I wonder if I'm getting the pieces that I need for this?' I thought about it a little bit and then we talked about it some more. We decided that since the story is of a boy's dream, the long takes were appropriate. This thing of films and how you dream has been the subject of a long debate; do we dream in long takes or in cuts? We decided that we dream in long takes, so we continued to shoot in that style. We did have enough coverage and ran multiple cameras often enough that he had plenty of cuts and the editors didn't destroy too many of the long takes. They broke up a few that I was disappointed to see cut, but you have to tell a story and it has to flow, so I respect the editor's contributions. I guess it's best for the director and the cameraman to get it in the can and move on and leave it to somebody who'll take an objective look at it. We sometimes fall in love with the individual shots.

"One thing that enabled us to make these Louma shots was having the Vari-Lites, which could move and change colors and flash on and off according to the moods of the Supreme Intelligence. A problem you can fall into because the camera can go anyplace is lighting *around* the camera. Having a kinetic light scheme in that ship enabled me to keep the lights moving in such a way that I could light around the camera. We could be on three sides of something and not throw a shadow into it."

Pearl pointed out that the hillside set was built in a false perspective and was not as high as it appears. "We played a lot of games there," he said. "We had the boy's room built on both floors, so we could change the feeling of distance looking out at the hillside. We did some interiors that had nothing to do with the hillside and others that would start out facing into the room and then swing around behind the boy and shoot out the window over his shoulder.

"I knew that Apogee planned to use the Blue Max blue screen on that set in order to put the space ship into the shots when it landed and took off. Eventually I was going to have to shoot blue screen on that stage. We would take down the sky backing and hang their front projection screen in its place. The problem was that 95% of the shooting that we did there was night, and blue is the convention for night work. In addition, John insisted that we shoot all of his material on 5247, although I was doing most of the picture on 5294, because you can get a better optical out of 47. We were shooting VistaVision 8-perf horizontal format. The stuff that we would do for Apogee would have to use white light; otherwise, they wouldn't be able to separate it from the blue screen.

"So I worked out a method with my gaffer, Roger Sassen, of lighting the stage with about 20 10Ks with blue gels on them. We used the full blue color temperature correction on the 3200K globes, and then it was relatively simple when it came time to do the blue screen to drop the gels, which gave us white light and also the stop increase we needed for the slower film stock. So we

The night departure of the space ship surrounded by beams of shafted light and force fields.

worked for about a week and a half with lower light levels with the gels, and when it came time to drop the blue we left in all the flags, nets and branches we had hung in in lieu of cukulorises. The lab would make the blue separation to pull the mattes they needed from the white-lit set, and then when they were printing with the mattes they would put the blue night effect back in optically."

Pearl remembered his first encounter with Vari-Lites three years ago. "I was doing a concert film for the band STYX, and they had 24 Vari-Lites. They were fantastic! They carry 72 highly saturated colors that can be changed within a frame or two without nearly the light loss we get with gels. Using a system of dichroic filters inside, they change colors and they also have a lot of different patterns and an ability to rotate 360° and tilt 360°. The first time I saw them used in a stage presentation I wanted to use them in a dramatic situation, and science fiction suggested itself. Each time I worked with a different director I'd try to plant the seed: 'If you ever get something that's very high-tech or futuristic you should try to do something with these Vari-Lites.' Nobody really came up with anything until *Invaders.* I'd just finished a tour with Phil Collins and the band, Genesis, and they are part owners of Vari-Lite. Genesis travels with about 188 of them. So I put the *Invaders* people together with the Vari-Lite people and they struck a deal.

"We got some fantastic stuff," Pearl recalled with satisfaction. "The programmer I had was a designer named C. D. Simpson. He was very understanding of our needs and we had him in four or five days ahead of time to learn about the motion picture process, which is quite a different thing from stage work. In a show it goes on once a day at 8:30 and it's all keyed to that one performance, whereas we're making shots all day. He had to become aware of our technical limitations – the quantity of light we needed, how color is rendered in film, things like that. He had a lot of input into what we did with the lights and he gave us what we wanted and more.

"On the set at Hollywood Center we had 25 of them being used as though they were searchlights off the space ship. We had to tear out some of the permanents in order to make room for the Vari-Lites. Les would build these fabulous sets, Tobe would fall in love with them, and I would be obligated to deliver every inch of them that he could see. The sets were built right up to the edge, the trees went right to the permanents, the hillsides went right to the walls. We hung the Vari-Lites on motorized trusses that we could drop a bit to get a little of the feeling of descending as they were working. While we were setting up for that and C. D. was doing his programming to set the lights to get the look we had discussed, he put all the lights into the neutral position – looking straight down – and they popped into a very deep blue, and we saw that bounce off the floor and light up our cyc in this fabulous hue. It gave our night scenic painting a beautiful, rich blue glow that we used quite a lot."

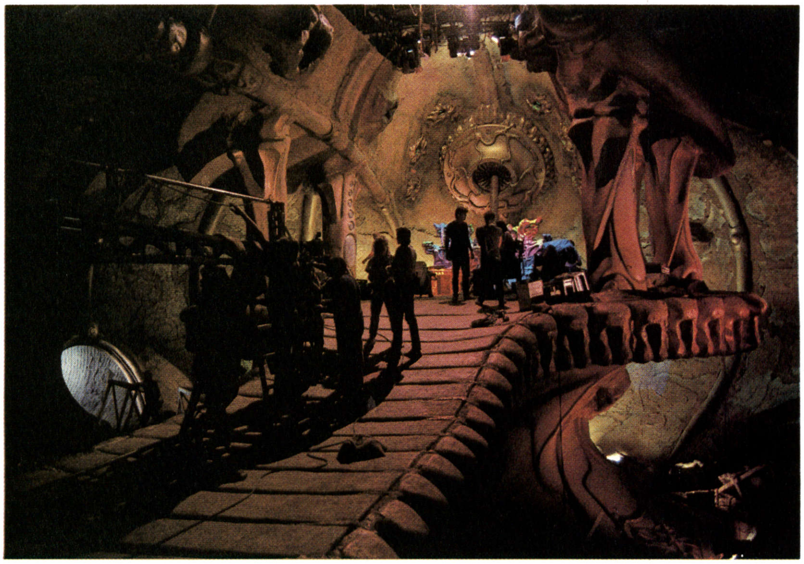
Pearl likened Simpson's participation to that of Frank Morgan in *The Wizard of Oz:* "You know, 'pay no attention to the man behind the curtain.' We had C. D. doing all this wizardry with the lights in one of the rooms of our house set. Sometimes he'd open the curtains to see what was going on outside and during rehearsal he could have the curtains open, but during shooting he was behind curtains. We had up to 50 lights scattered through the body of the ship and in the operating room. At times we also used them one at a time and my gaffer, who had been with me through all those rock videos, knew the lights very well. We had a single controller that could operate individual lights so that we could have 50 of them hung in the air doing their programmed routine while we took out one or two. Sometimes one of the electricians would hand-hold it and Roger would work a little controller about the size of a phone book that would make it do all its tricks. Then we could isolate it and put it right where we needed it."

"In the operating room, where the captives have implants inserted into the backs of their necks, we wanted a light effect unlike the rest of the ship. Each Vari-Lite can throw eight different patterns of light. Each has a disc containing eight mattes, consisting of six different sized circles, one they call a 'bathtub drain' because it's punched full of holes, and one called 'the gash,' which is a horizontal strip of very powerful light. We used the 'drain' pattern pretty extensively in there. The victims lie face down on a large, plexiglass operating table, and when we were discussing the table light, I suggested jokingly it could be something like a copying machine with a light that scans them. Tobe loved the idea, so that's what we proceeded to set up. We put four Vari-Lites under the table, which was kidney-shaped and divided into three sections, each large enough to place a person on. In the central one, we had two Vari-Lites moving their 'gashes' and one each in the outside sections. It is a very thin beam – almost laser-like, but it's almost three feet wide. It's like a scanning laser beam without the dangers a laser would have for the actors who have to lie face down through it all."

A small, harmless laser was also used in the sequence. "It was a red krypton laser that would put a spot on the neck – an aiming device for the Maritans," Pearl said. "It was a visual aids pointer, very low wattage, for use in slide shows. It was tricky in that we had to keep it absolutely still because it was such a narrow little point of light being thrown 30 or 40 feet to reach the point where the needle is to be inserted."

His notion to use Vari-Lites in the tunnels led to difficulties, Pearl revealed. "They're black boxes about the size of a loaf of bread and they're mounted on a yoke similar to that of a baby junior and sit on a base about the size of two phone books. I wanted to put them into the shots because of the robotics, the way they move. But as the design of the ship developed it reminded me of the chest cavity of a massive beast, and these black boxes didn't fit in at all. So Les and his team designed a cover for them that looked somewhat like an eyeball. We didn't get the freedom and flexibility that I

Above: ***James Allport, James Karen, Hunter Carson and Karen Black react to the blue screen on an Apogee stage. Live action footage of an underground explosion will be composited later.*** **Left:** ***Destruction ray effect resulted from experimentation by John Dykstra and John Sullivan utilizing laser and streak photography with animation.***



Above: *Marines storming the throne room are met with violent energy bursts achieved via frame by frame animation.* **Right:** *Crew with Louma Crane in the enemy space craft.*

wanted, but we did manage to get them in shot and didn't lose too much of their capabilities. They couldn't do 360° anymore, but they had an ability to swing 15° to 30° and we could show the points of light."

The throne room occupied by the Supreme Intelligence is the most fantastic set in the film and required weirdly dramatic lighting. The creature itself is a toad-like monstrosity created by Sam Winston after a design by illustrator Bill Stout. "The throne itself was a fantastic design and behind it was a large shield or crest about 15 feet across which was the entrance and exit point for the Supreme Intelligence," Pearl recalled. "We had six Vari-Lites around the crest. We used smoke so the lights could be seen in the air, and shot the lights down to backlight the monster and the throne. It created a fabulous pattern of light. This was a tricky set to work in because it was so closed off, with only an opening down one side and a narrow slit on top. It was all curved surfaces and I felt it needed to be backlit to show off the structure. The holes left for me to light through didn't provide the angles we needed, so we were always hiding lights and moving them around, knocking holes in the set and lighting from around corners.

"The tunnels were textured in a spiral, as though they'd been drilled by a large auger bit. A lot of time and money went into that, so I felt obligated to rim light the tunnels to show the textures. I lit a lot from around the corners at the ends of the tunnels. We used cukulorises on the lights to break them up so it doesn't look like a hospital corridor, put lighting through steaming festoons that were built into the set, and knocked holes in the set wherever we could. We had a standby plasterer who would fill in the holes afterwards. Using steam is somewhat like putting diffusion on the lights, but as there was more or less steam in a scene it increased or decreased the diffusion and affected the quantity of light. In those places we used Mole-Richardson's new 400-watt Mini-Softs and LTM's little 200-watt Peppers."

All the photography in the "underground" sets was done on Eastman 5294 except for some blue screen shots, which were on the slower 5247. "I don't like to take the lenses all the way to wide open for two reasons," Pearl explained. "One, it's very hard on the focus pullers, especially as we were running multiple cameras all the time – with two or three cameras running, somebody's always going to have a focus problem they don't know about. Second, I just like a deeper focus, so I tended to work around a hard f2.8 rather than f1.4."

Some spectacular lighting effects were achieved through the use of the Musco Light, a gigantic lighting unit which has been used in several pictures during the past two years.

"We made some shots with the boy and later with 300 Marines at a real sandpit, which was wider than a football field," Pearl explained. "Tobe wanted the Marines to have some lighting of their own, figuring it was too big and there was too much going on to play it with just an overall moonlight effect. We had intended to use the Musco to provide my overall blue moonlight source – HMI 5400° Kelvin, a good starting place for moonlight, and bring in some nine-lights and other units for the rest. Tobe happened to see a photo of the truck that the Musco comes on. He said, 'Wow! This looks fantastic! I want to use it in a shot – put some NASA decals on it and say that it's a light NASA and the Marines bring with them.' There goes my blue light! 'You'll just have to figure out something,' he said.

"I decided I'd use it as a high intensity discharge lamp – a mercury vapor or sodium vapor – and we talked about it. I said that in discharge lamps there are two colors that look interesting, the blue-green and a yellow-gold, the sodium light. But we've already got some blue moonlight, so I wanted to go with the yellow-gold. He said he'd rather have something with a little more richness to it, so I came up with a gel combination for the Musco by using Lee Full CTO, which is used quite a bit for sunsets, with Lee 179 (chrome orange). We did a tidy job of gelling it and it took two rolls of color each time we did it. It makes a nice counterpoint to the blue moonlight, creates a nice surreal quality, and gives the scenes a bit of an edge over just playing it in white light with a little blue rimming."

According to Pearl, some of the more striking shots utilizing the Musco are not in the final cut. "There was one transitional shot at the El Toro airstrip. If the picture runs a little long, the first thing they do is cut out all these grand transitions. It was a shot across the tarmac of the takeoff strip, and there are about a dozen F-16 jets parked there with the

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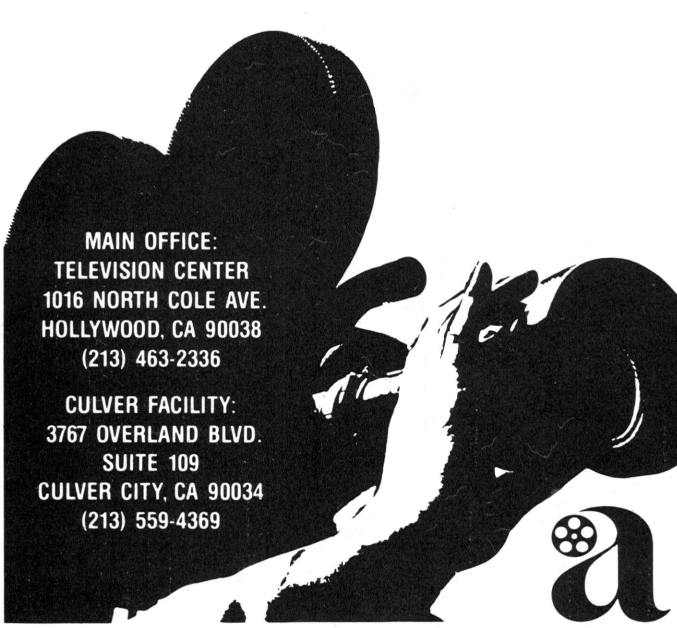

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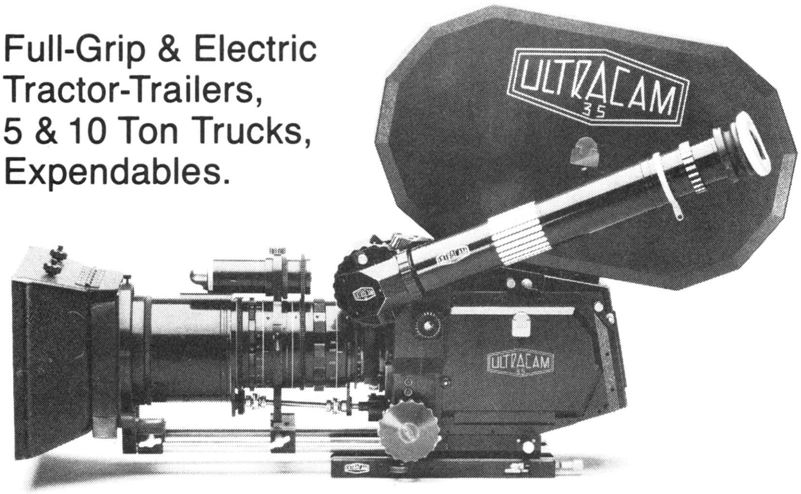

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control tower and the whole control building for the airstrip in the background. The camera craned up for a massive wide shot and panned 190° around to the side to something equally as big. It was done mostly with the Musco, which was about a mile away, and we broke half of it into the jets and the control tower and half into the other area, where they were loading a liquid oxygen truck. Both sections were lit from a mile away with one Musco light!

"El Toro is close to the ocean and we got socked in, thick as pea soup. The fog came in about 2:30 a.m. The light levels were choking-choking-choking, getting darker-darker-darker, and everything was a long throw. We managed to move the Musco and put it a quarter of a mile away and it was only 15 minutes from when we said to do it and when it was back up and re-lit!"

Another sand pit had to be built at the Long Beach facility. "Because of the child labor laws we couldn't wait till it was dark enough to shoot the night scenes with the boy at the real sand pit," Pearl revealed. "So we built a smaller one – about 80 feet across – in the hangar." This began our troubles with dust, which persisted throughout the picture. There are supposedly choppers circling overhead and there's a lot of wind. Tobe really liked the effect, and when he gets into effects he likes everything to be going – lightning flashing, flashbulbs going off, wind machines, air mortars, air movers – you name it; so we had all kinds of air flying around. Because most of our effects take place in the sand pit, in the tunnels and in the ship, where it's basically all cut into this dirt and sand, we had problems. It's a tribute to my assistants that we had no scratched footage. If the wind and everything else wasn't enough, we had the vortex that sucks people down into the sand, a rotating funnel, really stirring it up. The cameras survived better than many of the people did, with dust and sand getting into our lungs. The majority of the crew was out a couple of days.

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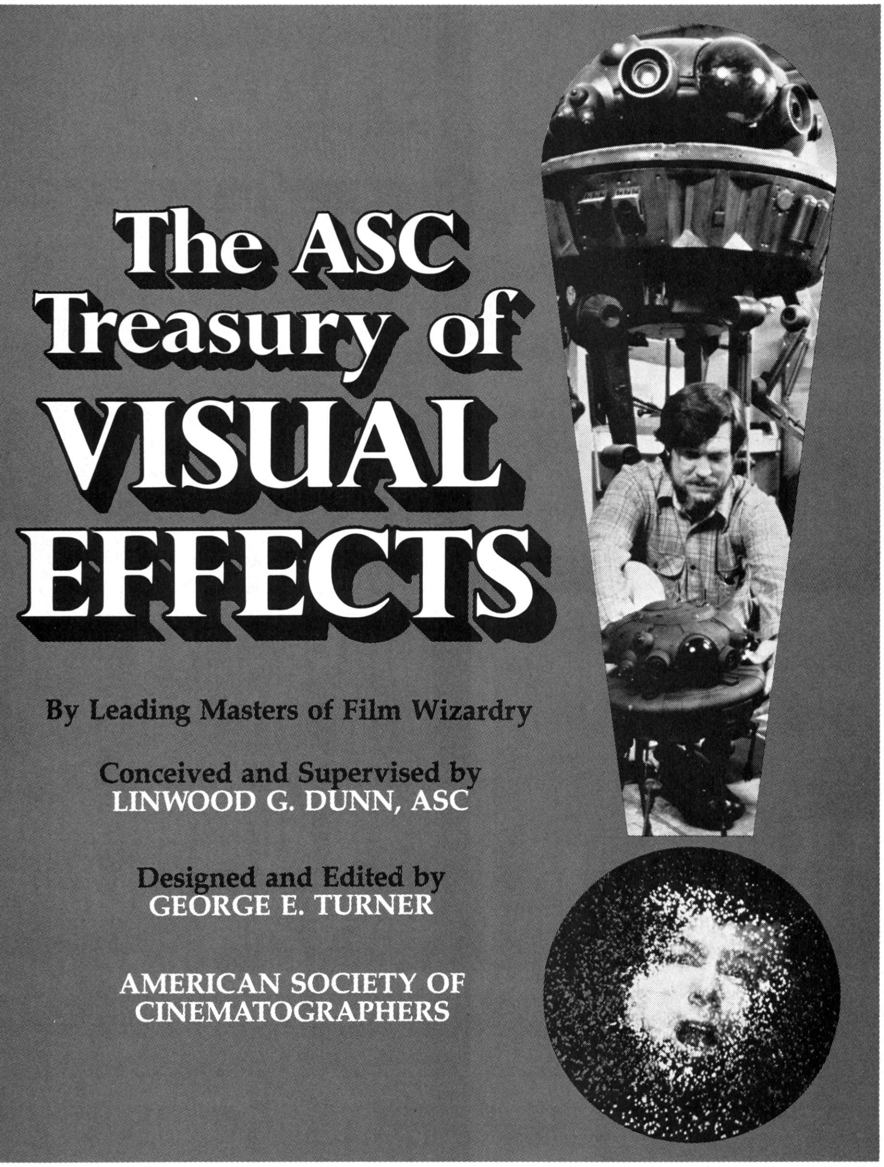
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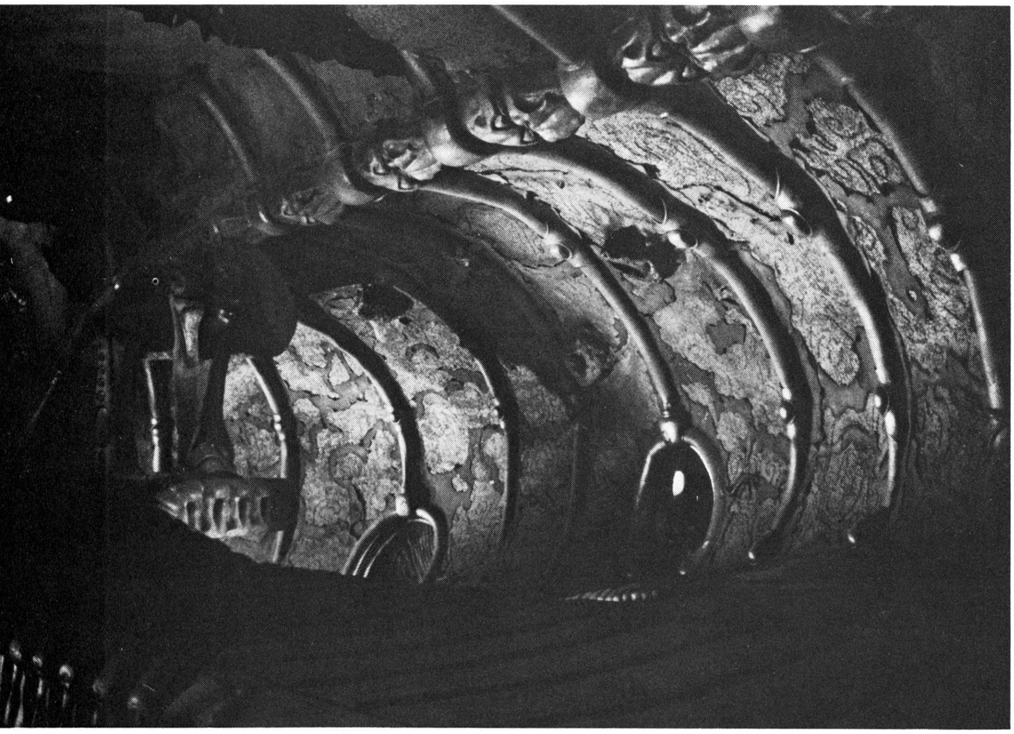

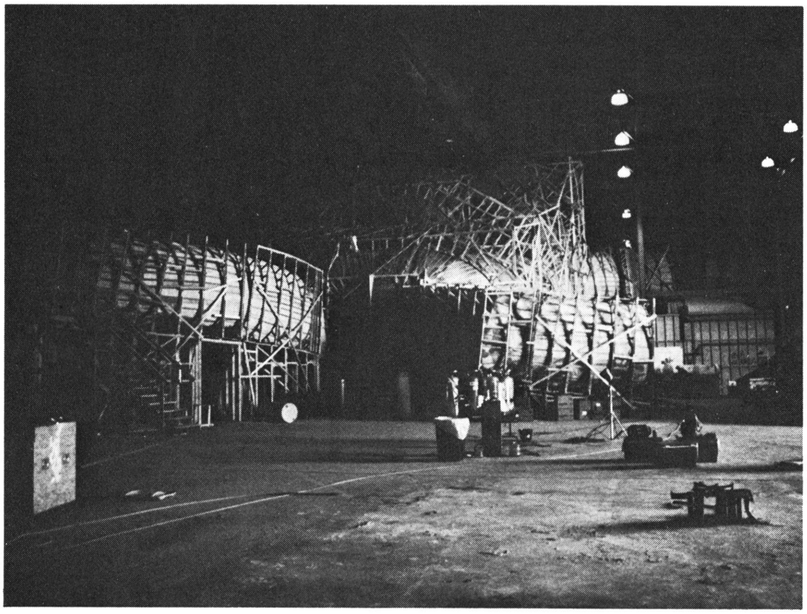

Above: ***Spacecraft interior resembles the chest cavity of a giant beast.*** **Right:** ***Inside the Navy hangar on Terminal Island.***

"They gave us sophisticated breathing devices, and then we couldn't tell who anybody was. We had hats on to keep it out of our hair, goggles to keep it out of our eyes and respirators to keep it out of our lungs, and nobody could hear through all this. I was trying to light a scene where people were being sucked into the vortex and I ripped the thing off my head and threw it into a corner, saying that I'd rather die than not be able to talk to my gaffer. I'd start off every day with a respirator, but in an hour or two I'd tear it off. We used Vermiculite instead of sand because it's very light and the machine would churn it up like it had to. Real sand was too dense. We referred to the ailments everybody got as *vermiculitis*."

Some of the more important lighting effects were intimate rather than spectacular, Pearl related. "One thing Tobe and I played around with was to take the light off the faces of the actors once they've been operated upon, particularly out of their eyes. In some places it's a subtle thing and in others more direct, but you never quite get a clear look at them once they've had the implants, and it helps, subconsciously, to create fear of them. There are two scenes played in the kitchen at breakfast. In the first, things are relatively okay but it's tricky in that the father has been possessed; it's a bright morning and the sun's coming through the window – it's almost like a cereal commercial. But on the second one, where the mother and father are both possessed, they play most of their scenes standing while the boy is sitting down. I took the 12K HMIs, which were giving me a good pattern of the windows and punching quite a bit of light in, and moved them a little bit to where the light fell just under the faces of the mom and dad. Their heads are in darkness, but we've established this light that throws the window pattern all over the kitchen, so it has a scary feeling even though the scene is brightly lit.

"One reason we shot some normal scenes at f2.8 when I frequently shoot f.4 on fast stock was that we didn't want to lose the deep, saturated colors that we wanted in the more frantic, intense moments. It worked out that f2.8 was a good stop for the Vari-Lites, which were punching through and reading well at that stop."

A number of key scenes required collaboration between Pearl and John Dykstra, director of special visual effects photography. "Basically, Dykstra directed these shots and he and I worked together to set them up and then we'd show them to Tobe and he'd approve it," Pearl revealed. "Then John would tell me the f-stop he required, and he frequently was in need of f5.6 or 6.3 – and we were using the slower stock.

Dykstra shared an Oscar for the visual effects of *Star Wars*

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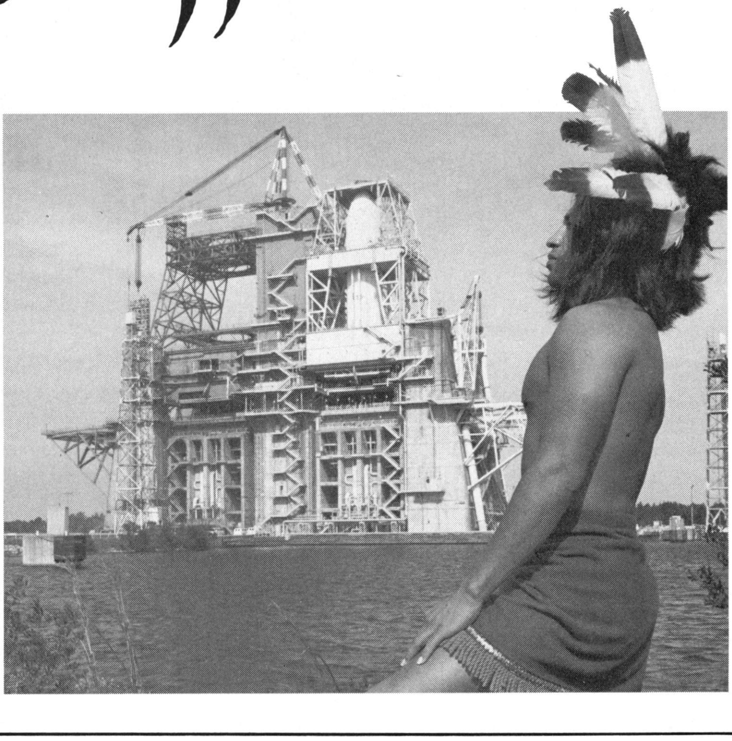

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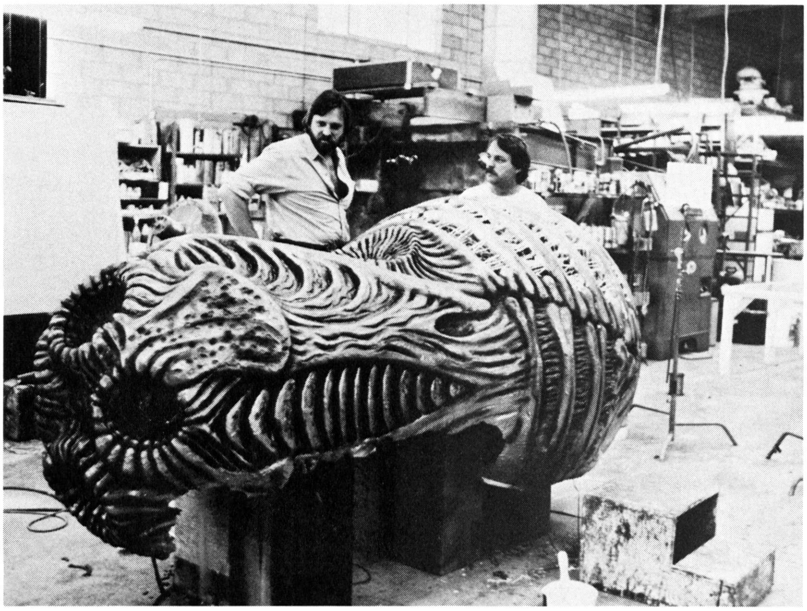


Above: *Drones guard the throne room, with energy bursts added via optical printing.* **Right:** *John Dykstra and chief model maker Grant McCune examine the explosion model of the Martian vessel.*

and won an Emmy for *Battlestar Galactica,* designed the famed Dykstraflex motion control camera system, and worked on the likes of *Star Trek: the Motion Picture, Firefox* and *Outland.* He is president of Apogee Incorporated, a leading visual effects company which operates from a 30,000-square foot facility in Van Nuys.

"We started with Tobe's initial storyboards, which were more extensive than what appears in the film," Dykstra recalled. "We always start out with lots more boards than we end up with, so we tried to sort out what was most important and most effective so we could put the dollars we'd have to spend on the screen rather than into background information. The original Menzies film was low budget. Menzies used visuals instead of money – he made the film special by his camera angles and his use of camera movement and mood lighting. So, rather than giving our film the look of a crackerjack-whizbang-contemporary special effects show, Tobe's bent was to stay more in the realm of the original, which was a child's dream. When you watched it you thought you were seeing the real thing happening, but in retrospect it had a dream-like quality.

"I think Tobe tried to achieve that with this remake. It's true to the original in the sense that the story's essentially the same and we haven't modernized the aliens to make them friendly and have them pass out gifts; they're really bad guys and they don't go and have a peaceful settlement someplace. This dreamlike quality is what he wanted to achieve. Rather than having things be overly accurate they were done more for their 'look.' "

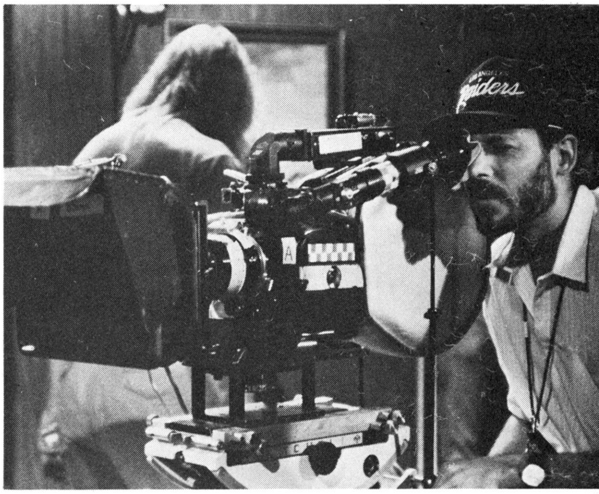
Dykstra emphasized the importance of close collaboration with Pearl in achieving a unified style throughout. "Daniel works very facilely with light and he's used to a broad spectrum of colors and a broad range of exposures, using the entire latitude of the film in getting bright highlights and good shadow detail. His work in conjunction with what I was to do in terms of reactive lighting was critical because the film uses color everywhere. There's almost no white light in the sequences involving the Martians and those we manipulated later on. We had to come to an agreement as to what kind of effect we were going to put into the scenes subsequent to live action photography in our post production segments. Where there are electrical discharges zapping and snapping around, then we have that kind of reactive lighting on our performers. This was provided by an extensive use of flashbulbs, and that staccato white light that washes out the rest of the colors has an interesting quality: It's in keeping with what we did with colors and brightness as being somewhat dreamlike.

"Another example is the alien weapon. If you think of dreams as being a summary or sketch of something rather than a real life thing, the beam that comes out of the alien weapon is more what you might imagine an alien beam to look like than what it might be from a physics standpoint. Our bent in every case in terms of the visuals we were creating and the photographic technique we were using was to stay right on the edge of reality, but always to have the feeling that it's a little dreamlike. Which is hard to do, because it's a very thin line between looking real-but-unreal and being ludicrous. And there is the mental telepathy effect, which was visualized as a series of flares that popped around the Supreme Being's head.

"That was a critical interface, photographically making the post production images meld in conjunction with the original photography," Dykstra emphasized. "So that even though the image you see on the screen isn't real, you still suspend your disbelief enough that because the thing is there and you haven't ever seen one of those and you're not even sure such a thing can exist – because there's reactive lighting there you buy the idea that you're actually seeing it."

Because Vari-Lite was used extensively in the principal photography, it became a prime factor in Apogee's work as well. "Because it has that broad spectral range and because they use dichroic filters in the lamps, they produce a very saturated band with color which gives a very different kind of look," Dykstra said. "We had to find methods of making a narrow band of color for the components we were adding to the scenes, so that we wouldn't end up with some washed out pink when the background has a 10 ammeter wavelength red spot. It's interesting the way that light affects the film, because – depending on where it falls in the sensimetric scale of the film – it either exposes incredibly brightly or it doesn't show up at all! They were originally designed for stage performances and they're really a visual medium, designed to the visual range rather than to the film sensimetric range because they're not motion picture lights. There are some colors in there that don't record at all on film.

"When you use dichroic filters the colors are just gorgeous, so incredibly saturated they almost lift off the wall. Les Dilley came up with a look for the ship, in conjunction with Dan and Tobe and me, that came down to a color



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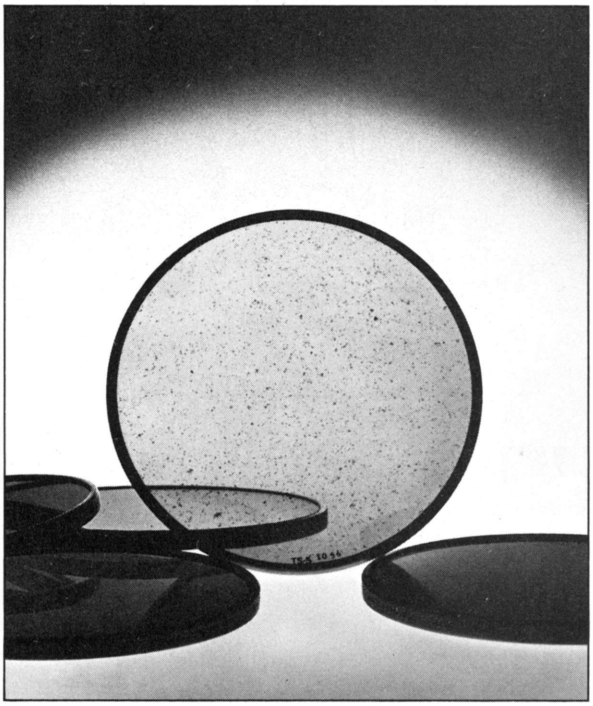

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that's almost monochrome. All that color was added with the lighting. You get a sense of its being colorful, but if you walked on the sets with the work lights on it was all one color."

The scenes of the space ship landing and taking off were created at Apogee with miniature and blue screen effects. The concept of the ship is, Dykstra pointed out, unlike the usual "aerial oil refinery" of tradition. "It is more of light and force fields. It has a surround that is intangible; it doesn't have rods holding lights, it's a sphere of light that surrounds the ship, and that light has animation and activity in it. That activity changes as the ship comes closer to earth, as though the activity protects the ship as a thermal shield protects the space shuttle when it's making its entry. It's what buffers the ship, which is in the center of this ball, very dark but not lit like a giant hotel; it's more of a mechanical-organic shape.

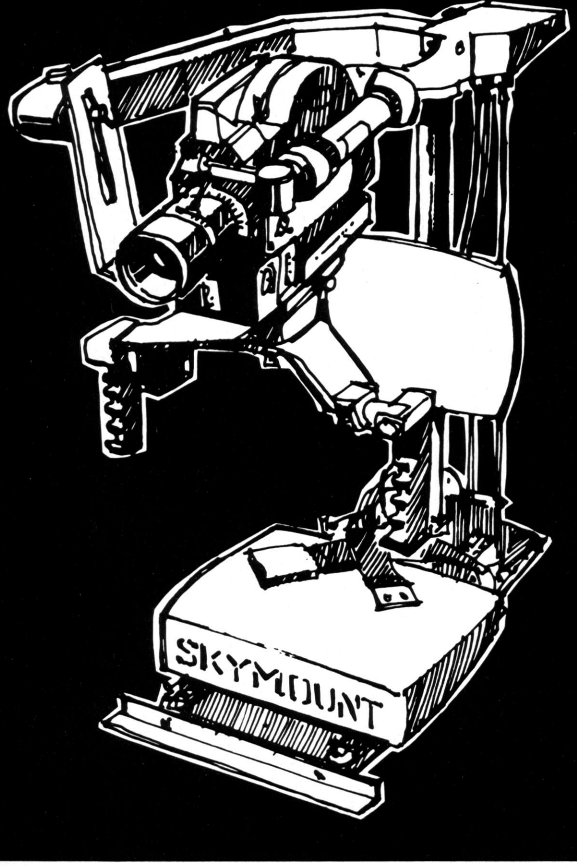
"The ship itself was a three-foot miniature, somewhat in the shape of a peanut. To surround that, and to tie into the limited practical lighting we put on it, we developed the force field. It was generated by projecting light into smoke, which allowed us to create little shards of light. It resembles streak photography, but it's much simpler and less expensive to do. Then it was tracked to match the movement of the size change that occurs with the little ship inside of it. Then we animated some electrical discharge to come down and tie in to the light movement we had going on in the clouds. The clouds were conventional cloud tank photography. Then we composited all that optically – and there are six or seven elements – with our blue screen foreground, which was shot at Hollywood Center." A nine-foot version of the ship was used for the climactic scene of its departure into space.

The Blue Max high power blue flux projector and the tessellated screen, both of which were given Academy Technical

Achievement Awards after their development at Apogee, were utilized at the hillside interior-exterior. “We had a 55 or 60-foot wide screen with projected blue which allowed us to do a lot of effects lighting,” Dykstra revealed. “We did all different colors – except blue, of course – for the illumination of the shrubbery. We photographed multiple passes as well because everything pretty much stayed in place. We had some wind and objects blowing, but rather than try to do all the lighting in one pass we made three or four different passes. This gave us more control of the brightness as the ship landed and of the reactive lighting of the shrubs. Actually, we slowed the camera down to pick up exposure because the Vari-Lites were on the very bottom edge of exposing at f.4, so I just slowed the camera down and shot some stuff at 6 fps. It gave me two stops on the Vari-Lite. There were no actors in the scene at that time and all I was photographing were spots of light. That the lights were a bit more animated didn't hurt and everything was in register because they were locked off, so I had some other units that we could add in to enhance the effect. It worked even with the actors in it because I shot them normally lit as they came down the hill and then shot different speeds and different colored light effects for the surrounding area, so it was almost like doing a time exposure, laying in an exposure in here and another in there. All the material with the live actors was done concurrent with production – we were there on the set with them on specifically scheduled days.

“Our last day of blue screen photography was the last day possible because the stage had to be struck that night; somebody was filming there the next day. So it was one of those things where it's three o'clock in the morning and I have to say, ‘Okay, we've only got one more shot, boys.’ ”

Dykstra described some unusual blue screen shots which were done at Apogee's studio. One shows Bud Cort being destroyed by an alien weapon. “We did an interesting thing using front projection material and some tear-away clothing we rigged on him and some pyrotechnics. What happens is that the beam hits him and he explodes from within. His clothing is flying off and he's wearing front projection material under that. There's a light source at the camera which we rev up so that his body glows and then he vanishes. You could do all these things essentially with animation if you wanted to, but we wanted to achieve an effect that was more spectacular than the conventional thing by using the money in an ingenious fashion. We shot him blue screen with a front projection lamp directly adjacent to the lens projecting through a beam splitter and Phil Corey and his effects boys blew the clothes off him. Then we hit with that front projection light. Bud had to be rigged with wires tied to all his clothing. He had a wire umbilical that was hooked into all the pyrotechnics that were on his front and I had an air cannon off to the side. When we hit the button on all the pyrotechnics,



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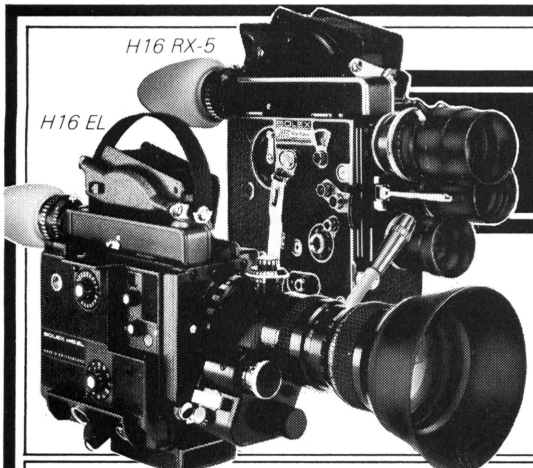

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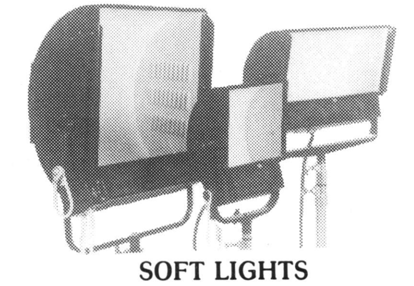

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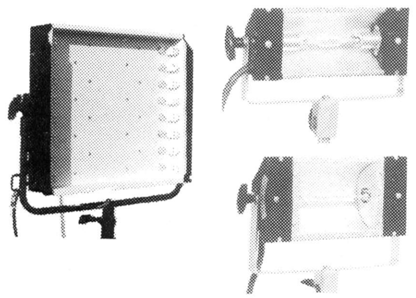

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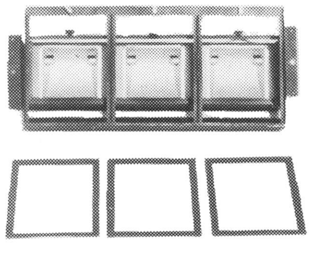

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the air cannon went off and blew him back. He had to stagger and be hit in the stomach like he really got punched by the beam. It was quite an experience for him; most people don't realize that when you get into a situation like that it's quite a deal. But it came out well and it looks awfully good. The reactive lighting was crucial, with the performer on the blue screen with the intermittently changing lights. We used the same gels that were used in the live action set, working back and forth with Daniel's people to make sure we got the proper colors to get it all to balance up."

Explaining how the beam itself was created, Dykstra disclosed that "It was generated using a streak technique and laser photography, scanning a laser onto a rear projection screen and doing some streaking and trick computer programming. Paul Johnson came up with a program to allow us to do this kind of interesting beam shape and John Sullivan shot it. It was laid in again with a contrast matte to make it so that as the explosion in the background fluctuated the beam had some kind of consistency to it. And we had an animation piece added to link the beam to the gun and another on the other end to link the beam to the thing it was hitting.

"There are two smaller blue screen shots in the picture where we put people into the tunnels in conjunction with a pyrotechnic or explosion, physical gags where it wasn't safe to put a performer in with the effect. We shot the piece of action and then we shot the actor subsequent to that. Roger Dorney did a beautiful job of compositing them."

Dorney, who is Apogee's optical effects supervisor, added that blowing Bud Cort apart created an unusual problem. "By chance we were a little too hot on the exposure of the splitter and the projector, which then bounced off the screen and formed a lens somehow. John figured out where it came from – I haven't yet – but we saw a ghost image, upside down, that rolled across the blue screen. It usually takes a garbage matte or some hand inking to get rid of that, because it comes out as a hole in the matte. In this particular case, because there was an explosion coming off the actor, I wanted to retain the smoke and the fine detail of it, so I needed to go to a real thin burn-in matte. At first I wanted to go without one and play around with some things to make it all work, but with the hole in the matte I couldn't do it, so we kind of massaged that a little bit, The cut doesn't dwell on the reflection, so we got to send it through without making hand-inked mattes.

"As it turned out, the cut saved the shot, much to our relief, because it was a good shot. We got to retain some of the smoke. Because we overexposed the glowing parts of his body that were front projection material, it came out a little hard. We, therefore, went back in and took out those sections with rotoscoping and then put them back in. Then we softened it up and made it more like it was intended in the original concept."

Dorney said that the blue screen shots combining actors with explosions were "fairly standard except for blowing, wispy hair. With that much hair in there, especially Karen Black's hair, I didn't know what to expect. We massaged it so it isn't just globs of hair any more – it looks real."

Another effect which presented problems for Dorney and his optical cameraman, Jerry Pooler, and assistant optical cameraman Cosmas Paul Bolger Jr., was that of the alien craft landing behind the hill. "They shot the live action with our Blue Max, and that's fine and dandy," Dorney commented. "And when they hit those Vari-Lites up on top, just outside the picture area, and they would shine the reactive lighting for any beams that they could get, they would then shine these lights down over the blue screen. And that's fine – it looks great in the dailies. Except those colored lights all hit the screen as well, which means the screen is magenta sometimes or white or red, so it got a little interesting pulling some mattes. I just played with them. The theory is that you can put any kind of light out there and it'll neutralize itself in making the mattes. That's a lot of theory, too.

"The reaction they wanted was on the ground anyhow, not in the sky. For the sky area we generated more beams, different color beams, on stages, and overlaid those with the supers both behind and in front of the film. This gave them what they were looking for. We added those units on; the reaction on the foreground is what they got out of the original. It was bizarre. We pulled it off without rotoscoping, which is the game you play in this business."

There were also some unusual optical effects in the scenes of the landing and takeoff of the miniature alien craft. "As it came down and went behind the hill there were various passes of the lights which, the story line goes, came from a sort of envelope around the craft," Dorney noted. "Around that as well there's a giant electrical discharge type envelope, a force field or whatever you want to call it. All those ele-

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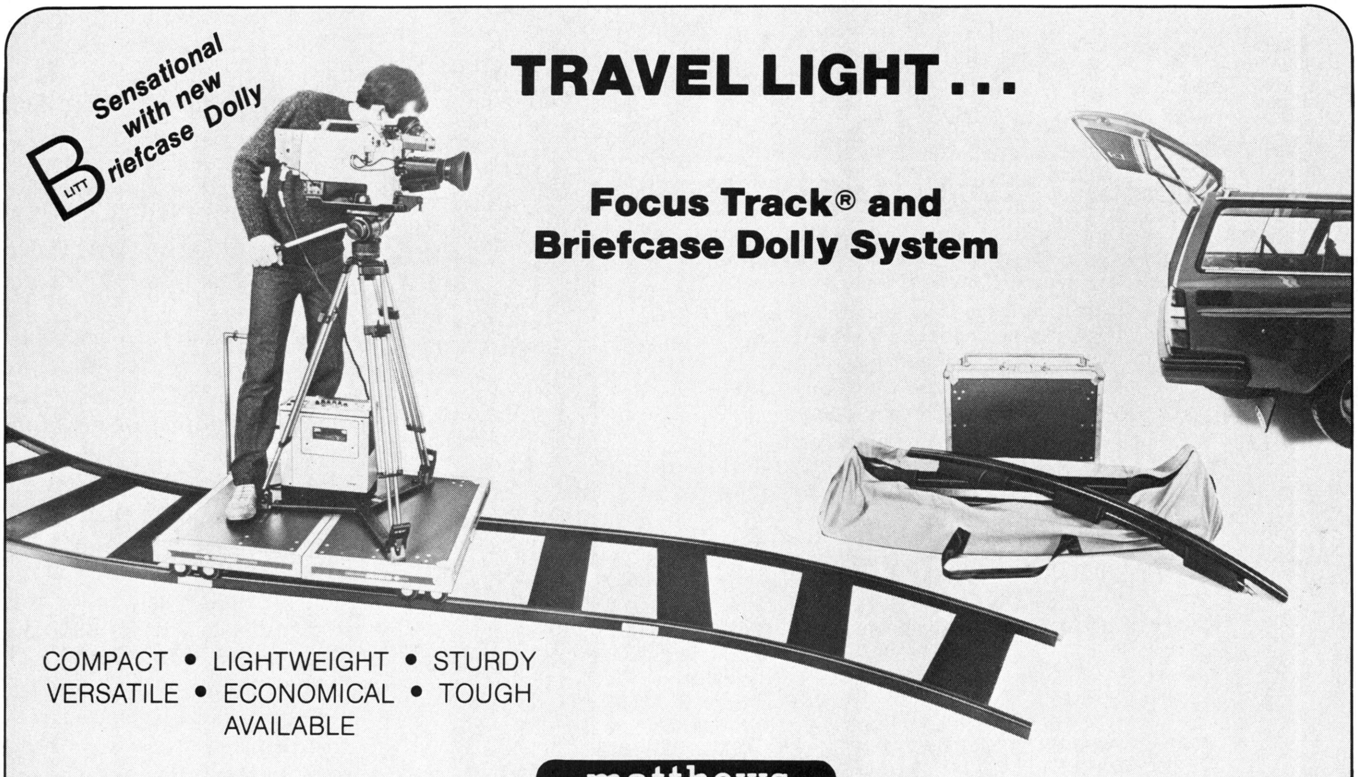

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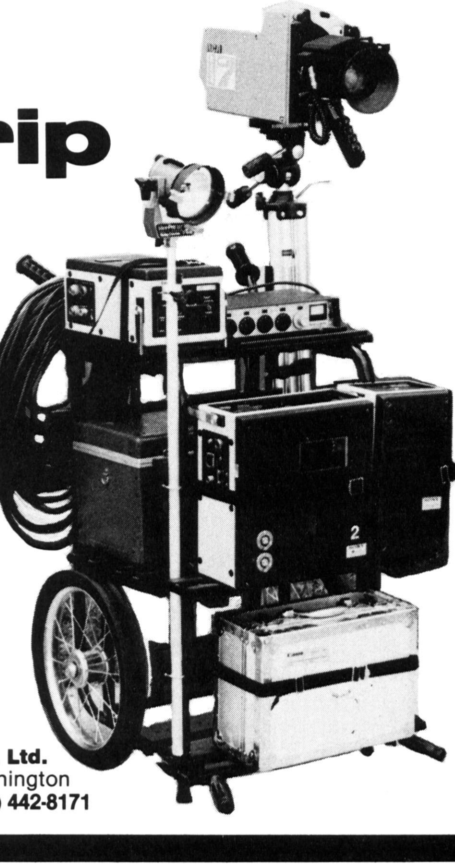

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Sockets to go. Gels to go.

ments were then superimposed and the energy field comes rolling toward camera as the ship goes down behind the hill into the sand pit.

"Aside from blue screen work we had a final battle sequence, between the Marines and the Supreme Intelligence, which meant compositing a lot of units that were shot on the stage and units that were shot in animation. The electrical effects – lightning-like things going from point A to point B and pillar to post and enveloping soldiers, things like that – are fairly standard stuff. We put them in with a couple of passes to give a glow around the animation pieces rather than just a hard piece of animation – hard in the middle and glowing on the outside. It's a double pass situation with some diffusion.

"They shot some other units which we call 'pop tarts' – that's a generic term around here – which are lens flares, a little zeon bulb and we just flare the lens. This time they added a little wrinkle on the stage because we did that one to death on *Life Force*, so we had to change it a little bit. They shot them and bounced them off or through mylar mirror-type tubes so that some of the images bend around so that there is a different image. Some of them are also shot straight. It's a DX (double exposed) type of image, but these look a little different, a little stringy-wispy. It's not subtle because the whole sequence has gone crazy and there are things going on all over the place, so they're hard to identify other than that there is something strange going on."

Dykstra commented enthusiastically about the in the optical work. "Roger had to spend an enormous amount of time working out the right balances for contrast mattes because we did a lot of stuff where what would normally have been a burn-in couldn't simply *be* a burn-in because we had scenes that went from black all the way to a burnt-out white. If we simply double exposed electrical discharge over that scene without running a mask, what we'd end up with is additional exposure and the electrical discharge would tend to get brighter and darker with the scene – which isn't what we wanted. The electrical discharge should look like the illuminating source and the scene goes up and down *because* of it. Therefore, we had to generate some contrast masks off the animation, which was done here and is lightning with a slightly different look to it. Roger generated some masks to allow us to put it over a scene with a very broad range of exposures in it and still maintain its brightness. When you look at something that's very bright and the scene lights up, you get a retinal retention that makes the scene start to go negative, and by using that mask it enhances that effect and makes it seem all the more real, more like actual photography of an event that's occurring."

Dykstra explained how the electrical discharge mattes were generated. "For the electrical discharge thing we ran a background unit, which was the live action and we ran an electrical discharge – a piece of animation. In some cases we had two or three elements, depending on how much there was in the scene: background electrical discharge, which was run with slightly more diffusion to give it aerial perspective; middle ground electrical discharge, which might have been run at a slightly different exposure with slightly different diffusion, and then the foreground pieces. Then those components were run and made up with their individual exposures and diffusions in conjunction with contrast mattes in each case. In some cases we might not run the contrast mattes if the subject was very small in the background. On top of those units were the 'pop tarts,' telepathy units giving a visual representation of this alien 'shouting' his commands. In the original script this was played up much more: there was a whole series of hieroglyphs which floated in front of his head while he was doing an interchange of information with his minions. After they worked with the script it was one of those many things that fell by the wayside because it wasn't important; it was more of an embellishment. As a result we did a simplified version of his telepathic signals when he's agitated at the end as they're blowing up his ship. They're timed to coincide with the right color and light in the background."

As Dykstra sees it, Apogee's work in *Invaders* is effective because it enhances the picture without overwhelming it. "Key events are the alien ship coming down behind the hill in the opening, the departure of the ship at the climax, and, after the boy wakes up again, the subsequent re-arrival of the ship," he said. "This is the punctuation, so to speak, of what's happening. The rest of it, frankly, was really *staying away* from effects. That's interesting because you see the ship and you see the kid when he sees it, but you're not really sure whether he's dreamed it or not, because we don't throw in a bunch of aliens and effects all through the movie,

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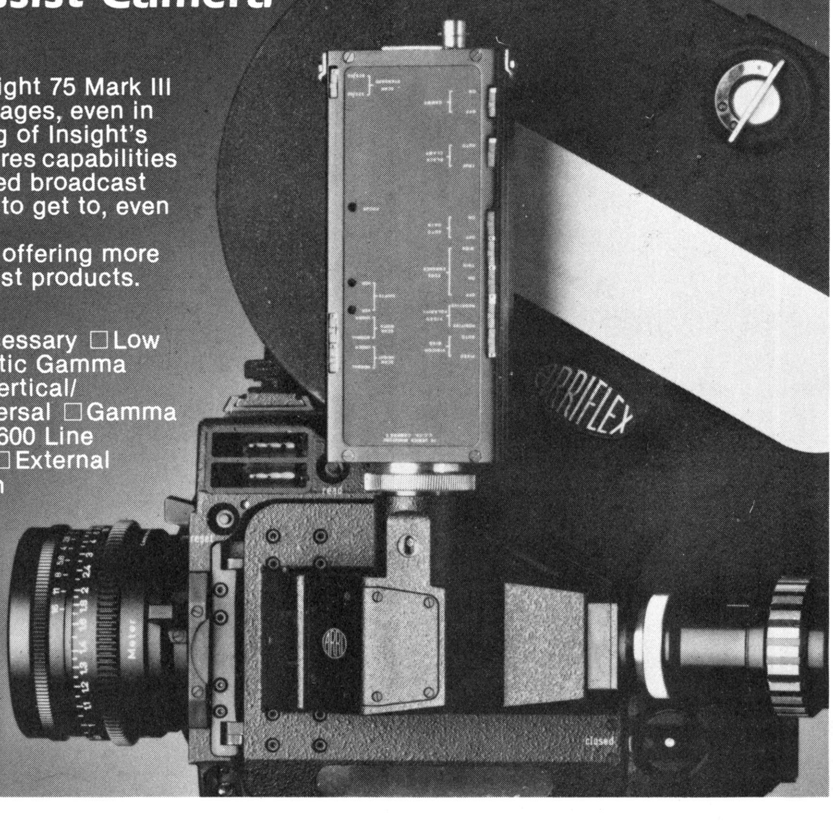

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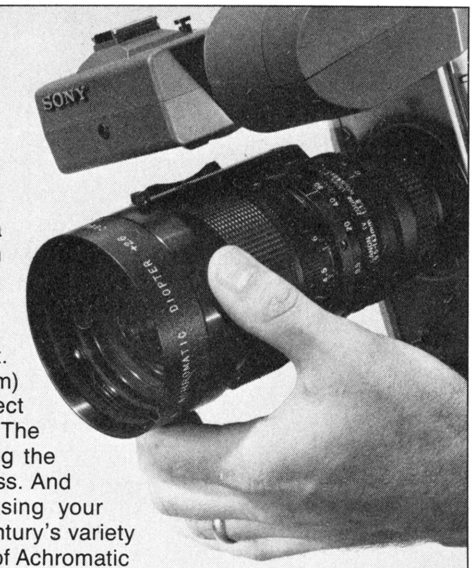

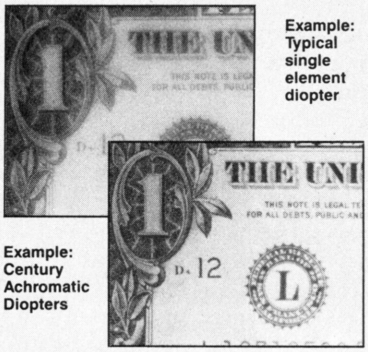

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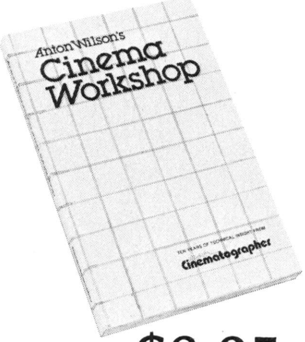

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so you come to view the boy the same way the adults in the film view him. His story is outlandish as all get out so his parents go 'yeah, yeah.' But we know that he saw it or at least that he thought he saw it. As you go through the film you finally come to the point that all of the things he wants to take people to see, that they haven't seen but he has, turn out not to be there and maybe the kid is off his nut. So when you get to the point of seeing the space ship take off it brings everything back into perspective. It's the punctuation. We hope the nightmare is over.

"I think there are about 20-odd of our shots in the film, which is a small number in comparison with what we normally do, so each of these shots individually is pretty spectacular. The difficulty, of course, is that if you have a small number of shots, you have to generate a new technique for each one," Dykstra concluded.

Dorney also spoke in favor of restraint. "Sometimes it seems we put in reels of effects," he said. "There aren't that many opticals in *Invaders,* but they are varied. it showcases some of our stuff, but more subtly than some we've done. We tried a couple of new wrinkles on how to put these shots together. We try something different each time, because if you standardize too much you get locked into having a certain look. Apogee started after *Galactica,* which followed *Star Wars* – similar feel, right? Then *Star Trek,* which wasn't so similar but it was still spacey stuff, basically. We got off into some different areas with *Firefox,* where there were no starfields and we couldn't get away with too much. At the time nobody even tried to put a matted ship against a cloudy sky because – forget it! – something always shows someplace. I'd like to do that picture over again to get rid of about three minutes of it. At the time it was very sophisticated. Since then, a generation later, we're *all* more sophisticated." △

Photos by John Brown and Nancy Moran

Labyrinth and *Legend,* Big Screen Fairy Tales

by Ron Magid

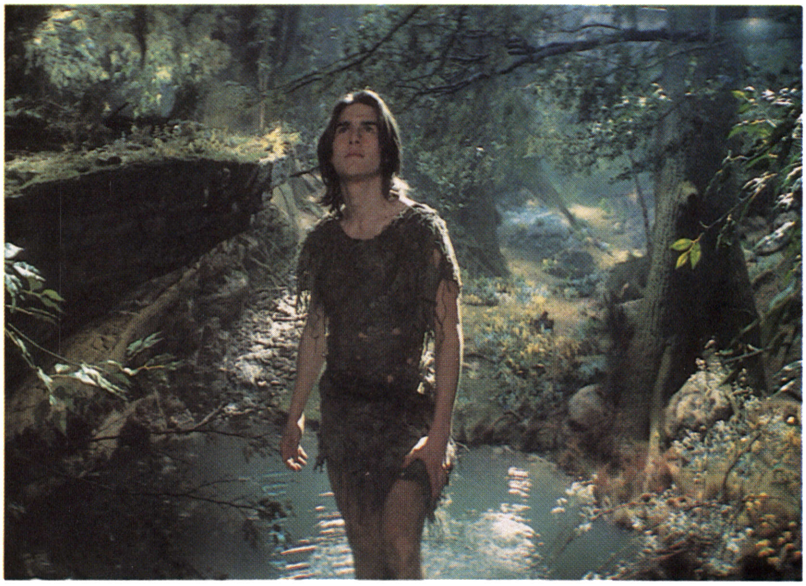
Like a sleeping dragon, the fantasy genre has lain dormant for over a year, as if under a strange enchantment after the poor reception afforded such films as *The Neverending Story* and *Return To Oz.* Now the evil spell seems to have lifted and the slumbering beast has once again raised its fantastic head. This time around, the offerings are promising: Ridley Scott's long-awaited epic saga of elves, fairies and goblins pitted against the Lord of Darkness, *Legend;* and Jim Henson's *Labyrinth,* an allegorical depiction of a young girl's struggle against responsibility and temptation. If the subject matter of both films sounds somewhat similar, then ponder another coincidence: *Legend* and *Labyrinth* were photographed by the same man.

"It sounds very similar, but when you put the two together, they're not really," insists cinematographer Alex Thomson, BSC – and since he worked on both films, it's difficult to argue the point. "I think *Labyrinth* is more like 'Alice In Wonderland,' and *Legend* is more like a fable. I don't know exactly how to differentiate them in literary terms, but they're not the same. *Labyrinth* is a lighter film; there's probably more humor in it and there's music and it's not meant to be taken seriously, whereas there are elements in *Legend* that are quite serious, like the confrontation between good and evil."

This difference in tone necessitated a very different photographic approach in each film. In *Labyrinth,* the premise was partly determined by the limitations imposed by the muppet characters, while in *Legend,* the darker tone demanded a more extreme treatment. "For a start, on *Legend,* we changed the diffusion quite often to suit the mood of the shot," Thomson recalls. "I mean even in the midst of a sequence we changed the diffusion from shot to shot, whereas in *Labyrinth,* I used a flattop texture screen on every shot. I probably used a lot of light on *Labyrinth,* all huge 8K HMIs and things, mainly because you need the depth of field with the puppets. If you don't stop down, they don't look real. I used the same kinds of lamps on *Legend,* but I used less light."

Legend was shot almost exclusively on sound stages at Pinewood Studios, most notably on the huge, famed 007 stage, where an incredibly detailed and elaborate forest set was constructed. In order to make the set appear as real and as large as possible, Scott had the trees built all the way up to the iron gridwork at the top of the stage, and he used a set of stretched metal mirrors running on frames 20'x4' wide to extend the forest setting to infinity. Additionally, because the film began shooting in winter but required a summer lushness for its initial settings, Scott had leaves tied onto the bare branches of the trees, and brought in

Ethereal lighting lends unicorn a fantasy aura.



Tim Curry as The Lord of Darkness.* Below: *Tom Cruise on the forest set.

other leaves and flower petals to drop onto the set for certain shots. Thanks to this obsessive attention to detail, the forest set is convincing throughout the film, in almost every conceivable type of weather, and from every possible angle.

Due to the unusual parameters of the forest set, a number of innovative techniques were employed, both in terms of the way the set was rigged and the type of lamps that were used. "Since the set actually went right up to the iron gridwork and you couldn't build any more stage space beyond that point, I had to put all the lamps above the girders, which had never been done before, and of course it made it dangerous for the electricians because they were actually walking on girders rather than on gantrys," Thomson recalls. "To actually move a lamp was a bit of a drama, you had to take it out of the stirrup and get it on a rope tackle and then drop it and haul it back up again and hope to goodness that you've chosen the right spot for it. Above the gantry, I had 50 dinos and I had 26 8K HMIs, which were the square-waved ones, which meant we could shoot at any camera speed we liked and it wouldn't make any difference. It was the first time they'd been used on a big production, so we had a lot of trouble with the HMIs, only teething troubles, since they hadn't quite perfected the bulbs and they kept blowing."

One of the most memorable shots in the entire film, the introduction of the unicorns as they frolic in an idyllic little brook bathed in a holy stream of sparkling sunlight, might not have turned out that way at all had it not been for a horrible disaster that befell the production only days before its extensive shooting schedule ended. "We had a fire. The 007 stage burned with everything in it, the Chapman crane and all of those lamps!," Thomson explains. "Fortunately, it happened at lunch time or we wouldn't be here talking about it! We had three days to go, and they were going to revamp the set anyway, but rather than do that, Ridley had it rebuilt outside. Although we were going to shoot with the unicorns on stage originally, they were actually shot in a stream that we build on the backlot. I had a huge canopy suspended on a crane over the top of the set, so I could move that to make the foreground darker or lighter, but God did the rest."

Another exquisite scene involving Tom Cruise's tearful confrontation with the last surviving unicorn was made particularly powerful by Thomson's dramatic lighting. In this sequence, Cruise falls to his knees in the snow before the mystical beast, and begs forgiveness for having accidentally allowed its mate to perish. The unicorn, at first rearing in anger and then moving resolutely towards Cruise, is lit with an angelic blue light that makes it almost seem to glow with an inner brilliance. "That works very well," Thomson comments. "I used reflective light from down on the snow, which was made of polystyrene, and I was able to make a bank of it just beyond where Tom Cruise stood, and by backlighting the scene very strongly, I was able to bounce the light back up onto the unicorn. It looked quite magical, and part of that was the way that Tom's arms were outstretched in this quasi-religious pose and the low angle of the shot." Though this sequence appears later in the film, it was shot much earlier on the forest set before the fire occurred.

Some of the most difficult things to light in the film were Rob Bottin's beautifully designed and crafted, but rather unflexible makeups, which appeared in virtually every shot! In order to give Bottin's characters an additional quality of animation that they might not otherwise have possessed, Thomson opted to move his lights across the creatures' faces. "It just makes it interesting to keep something moving," Thomson says. "We used shafts of light that I sometimes had moving. Much of that was Ridley's idea, and it followed through from the thing he did in *Bladerunner* with searchlights that moved about for no reason at all except that they looked quite good. He asked had I thought of doing that and I said, 'No, I hadn't,' so we tried it and it worked. In some shots I moved the lamps purposefully, I actually panned them on to let the makeups go a bit dark and then come a bit lighter, but I don't mean violently."

Much of Thomson's most intricate character lighting effects were used to bring Tim Curry's bullish satyr demon, Darkness, to vivid life. In the domestic version of the film, the first time we meet Darkness is at the very beginning of the story, where he laments his lack of power while bathed with a majestic purple light, his eyes and fingernails glowing green in the semi-gloom. "We used an ultraviolet lamp to light that scene," Thomson remarks, "but what we forgot – if we ever knew it – is that it alters the focal length. The scene is slightly out of focus for that reason. Apart from that, it was difficult to measure what the exposure was, but I guess we hit it about right. It was a curious effect."

Another curious effect, and one that was somewhat problematical to film, was Darkness' emergence from out of a mirror as he reveals himself to his unwilling bride-to-be for the first time. "We had to shoot it with two cameras so that we could get the reflection of him in the mirror," Thomson says. "Dennis worked out the camera angles for me so I'd know exactly where the reflections should come if somebody were to actually pass through a mirror. I don't know how he measured it, but he did! When you first see Darkness emerge from the mirror, I had a lamp above him and I was actually swinging it over the top of his head so that it appears to get lighter and then darker. I think Dennis rigged the insert shot of his cloven foot coming through the mirror using a touch of mercury."

The last third of the film takes place exclusively in the grim confines of Darkness' black castle, as hellish a vision as has ever been captured on celluloid, with its burning firepits throwing hot red glows onto the formless stone walls and pillars. "It was a difficult set to light," Thompson admits, "because all the pillars were free-standing, and we had to roll them about. Each time we changed the set-up, we'd push a column in or take one out, which meant that my lamps were always on the move, whereas on most sets, when a lamp's in position, it's in position and you either use it or you don't. So for each set-up, I'd thought I'd hidden my lamps, but then they would be revealed in the next set-up and so I'd have to re-hide them, and every time we moved a lamp it would create a shadow, so then I'd have to get rid of that shadow. The shadows on that set were very purposeful, though that had to do a lot with the dark color of the set, but lighting it was hard work really."

Lighting for Scott's perfectionist standards was also hard and demanding work for Thomson, and an occasional clash of egos would ensue when he felt that the director was changing the set-up just to exert his authority over the production. "Ridley is very much in control," Thomson is quick to point out, "and he's constantly looking through the camera. Then, at one time during the day, after I had set

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Jennifer Connelly desperately follows the **Labrynth** *seeking her lost brother.* **Below:** *David Bowie as Jareth, ruler of the maze.*

***Forest set from* Legend.**

all my lamps, we'd go through this exercise where he'd say, 'What would it look like if you saved that lamp over there?' and I'd say 'Well, it'll go dark over here,' and he'd say, 'Let's just take a look at it,' and we'd switch it off and then switch it back on, and we'd go through all the lamps on the set. We'd do this once a day, and having switched them off and switched them on and maybe used one less or one more, we'd shoot it, but I never understood why we went through this routine. Occasionally, I'd put a couple of lamps on that I knew we wouldn't need and which I knew he wouldn't like and when he'd say, 'What would happen it you saved that?', I'd say, 'I don't know. try,' and then he'd save the lamps that I put on extra! He'd ask, 'Do you think that's better?' and I'd say, 'Yes!', and then he'd be happy and we'd shoot it! It was a bit of a charade, really."

Actually, Thomson found Scott's attention to detail awe inspiring, especially on a production the size and complexity of *Legend*, where any given shot might require several dozen props. The cinematographer credits Scott with capturing the grimly hellish mood of Darkness' abode to begin with, thereby making his task considerably easier. "A lot of the film's atmosphere comes directly from Ridley, because he dresses the sets impeccably and he creates a lot of that mood himself, just through his compositions and because he props the whole thing. Those chairs in Darkness' castle were made to his design, and the plates and the tables. He's a marvelous sketch artist. At the beginning of the picture when Ridley was working with production designer Assheton Gorton, I was fascinated, because Assheton would say 'What we really need here is this' and then he'd do a marvelous drawing, and then Ridley would say, 'No, I think what we need is that' and then he'd get his paper and pen and he'd do a great sketch – so nothing was ever said in words, it was always done in drawings. It's always marvelous when the sets and the costumes and everything come together, it makes one's job so much easier!"

Oddly enough, despite the complexities of Ridley Scott's vision and the demands imposed on him by the heavy makeup, vast sets and production setbacks, Thomson found *Legend* to be a far simpler shoot than *Labyrinth,* primarily because the muppets created their own unique cinematic challenges. "I think *Labyrinth* was more difficult to photograph actually," Thomson says, "because of all those elements. There are more opticals and you've got to watch it because if your images get too dark, then the opticals won't work, it all goes nil for you and it never looks right. There was more straight photography in *Legend,* actually, there were marvelous sets, quite beautiful, but there weren't any opticals. *Labyrinth* is all trickery and so on, so from that point of view it was more difficult."

The need for complex optical effects, the lighter story content and Henson's own reluctance to imitate any of Scott's techniques resulted in a brighter lighting style for *Labyrinth.* "Jim Henson used to say, 'Look, tell me if you did this on *Legend* and we won't do it!'," Thomson recalls. "I lit the film brighter because the sets were brighter. In the hedge maze, the stonework was much lighter in tone, the backdrops that we painted were full blue summer skies, and, of course, there was a theatrical kind of element to *Labyrinth,* purposefully. One sees the hedge maze in the girl's nursery in the form of a toy and there are cut out wooden soldiers that re-echo in the full scale labyrinth, because it is a toy maze."

As the heroine makes her way through the labyrinth seeking her baby brother, she is forced to brave a series of trials. One of the most grueling of these is a deep, dark well which she falls through as myriad hands growing out of the slippery walls snatch at her body. Because the actress actually did her own stunt for this sequence, and because the camera had to fall at the same rate as she did, the set was built only a third as long as was necessary for the sequence, which created its own set of problems for Thomson: "It was difficult, and I don't know that we overcame all of the problems really. I could only light the set from one end of the tube, so obviously, the closer she is to the opening, the brighter she appears, and the darker she becomes down at the bottom, which is only natural. In cinematic terms, I had to make it appear that she got darker and darker as she fell, while still allowing for enough light that you could see her at the bottom of the shaft. Since she had to fall three times, and since we used the same tube and because we had to start her at the top again and drop her down to the lower level each time, that meant she got bright three times and dark three times, which is against the rules, really. I think we get away with it because each time she drops down, I made the set a little bit darker. To execute the lighting wasn't that difficult, I just poured a lot of light down from the top, and we put the camera on a hophead at the end of a crane arm that had a monitor in it. We operated it from the studio floor and dropped it using this mixture of a crane arm and a sort of standing crane rig with hydraulics."

Another grotesque setting through which the heroine had to pass was an overgrown swamp, so foul smelling that it is referred to as the Bog of Stench. Because of the scope of the shots in this sequence, and due to the fact that much of the set was underwater, lighting became critical. ''It was in a tank,'' Thomson observes, ''and I was restricted with where I could put my lamps, so most of the light had to come from the top. It was a bit of a combined effort because I started the sequence and then we moved over to another stage and we left Peter MacDonald to finish up, and I think he did very well indeed. I don't know that the Bog of Stench was more awkward to film than anything else, but as far as the puppeteers were concerned, it was difficult.''

The single greatest stumbling block during the entire production was actually its strongest asset: the beautifully crafted and articulated muppet characters that comprise 90 percent of the cast. The problem did not lie so much with the muppets themselves as with the large numbers of people and equipment required to operate them, and the fact that Thomson found them rather difficult to light. ''The main trouble with the muppets,'' Thomson claims, ''was getting light into their eyes. It's really strange, I didn't cotton onto it immediately, but unless you see their eyes, their expressions diminish a hell of a lot. That's why I had to try to train a lamp on them, which is something I did myself. For Hoggle and especially Lodo, I had to actually walk around with a hand held lamp which I kept shining in their faces to try to get it into their eyes. Of course, it's always a compromise, because when they look away, I'd need to have a light for each position.''

One of the things that made everybody's job on the production a lot easier was the presence of a video assist system. Even though the vast clutter of monitors all over the set created problems, Thomson found the video assist to be an invaluable aid. ''It was an extraordinary help,'' he feels, ''because often without it, you don't know if things have worked. We could basically do our own match on the video assist so we could tell more or less if things worked or didn't. Also, with puppets, it's vital. The puppeteers all have monitors, there are monitors all over, hundreds of them, because everybody needs a monitor to tell what their puppets are doing, so a common central exists which is the camera, and from that all the monitors are fed. For example, we had a fox character called Didymus, who was actually a real dog in the long shots, but for the closeups we used a puppet dog and we weren't allowed to see its legs because we had puppeteers on a little low platform, so for our tracking shots we'd have to frame above their hands. The video assist was very good because we could then check our work, especially in the tracking shots where we were watching headroom and wires, and we could see whether we'd accidentally cut off the bottom of the dog. Without it, we would have been on tenderhooks because there'd be no way to know until the dailies the next day whether we'd actually done it.''

The fact that each puppeteer required a monitor sounds reasonable until one realizes that some of the puppets required up to four puppeteers! This is one reason that the film is

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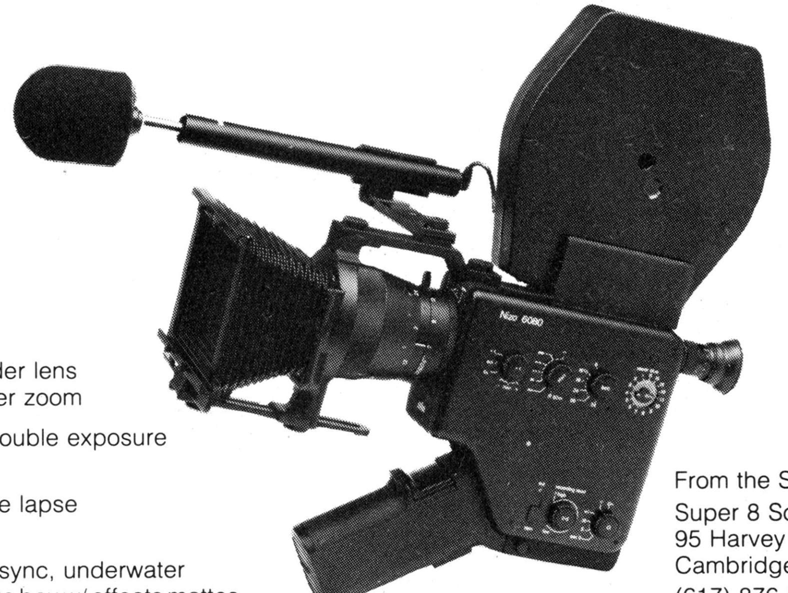

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primarily a series of beautifully composed static shots, because with all the people strewn about the set, there was no way to move the camera. "There's a number that Bowie does and there are about fifty goblins all in the shot at the same time," Thomson recalls. "Each goblin had at least one puppeteer, some of them had two, and the majority had three people operating them. The whole floor was strewn with people and we had to knock holes in the floor of the set where they could stick their hands up through, and some people had their arms through the set walls and there were all of these monitors going! Some of the characters were hand puppets and some were on wires like marionettes. It's difficult to hide the wires and they tend to bump into each other, the problem being that they all create their own shadows. All the puppeteers had a difficult time of it anyway, well, everybody did, because I'd light the set and when I'd say, 'Ready!', I'd find that there were fifty people all lying on the floor! You can't ask them to get in position while you're lighting but all sorts of shadows appear once they actually get in there, and sometimes I'd have to start again because I couldn't really visualize where they were going to be. That's why it took us a long time to make this movie!"

Because of the limited movement afforded the camera due to the large volume of people and equipment on stage for any given sequence, Thomson and Henson designed a striking visual tone for each part of the film. For a glittery and intoxicating masked ball scene, Henson asked his cinematographer to capture the feeling of being inside a bubble. "The special effects people made up a plexiglass dome," Thomson recalls, "quite like an air gunner's dome in the war. They distorted it and hooked it up to a motor that revolved it in front of the camera. Sometimes the image is clear and undistorted and then suddenly all the shapes change, and it worked quite well. I remembered doing this years and years ago when I did a picture with a sort of nightmare sequence in it and I'd got hold of some plexiglass which I heated up and distorted and placed in front of the lens. I did the same thing for *Labyrinth.* The scene is nice because it's all done in warm tones, and the decor was white and frilly and frothy."

Undoubtedly the most difficult sequence to shoot in the entire film was the climactic confrontation between Sarah and Jarrod, the goblin king, in his very unusual palace. Based on the designs of the noted artist and mathematician, M.C. Escher, the palace set is a visual conundrum of impossibly joined cornices and inverted stairways and angles. Because of the tricky perspective, Thomson at first found it difficult to keep his balance from shot to shot, although he soon got the hang of it. "It all got disorienting, really," Thomson says. "The floor of the set was actually on the roof of the studio, and to get them to appear upside down meant that we had to turn the camera upside down, and that meant that somebody else couldn't walk on the walls! It was strange. We also had to have odd bits of sets because some of the shots incorporated mattes, as when Bowie is standing upside down on one side of a landing and the girl is standing rightside up above him–that was two sets. I think matching things up is just a matter of experience, really. If you know what you had on set A then you know what you'll need on set B. I know I've got to match the lighting, so that it comes from the same direction and with the same intensity, and I could match the colors paintwise, so it was just a matter of experience."

Lighting the Goblin King's palace was another matter entirely, since Thomson had never had to light such a peculiar set before. "I didn't quite know how to handle that actually," he admits. "We made a model of it in pre-production, and I couldn't see any way of getting any contrast in it because all the arches and niches in it were blocked off. It's an interior entirely, even though there are a lot of passageways, they don't go out into the open so I couldn't put any light through the arches from outside. In normal terms, I would have had light coming in through the windows and arches, but here I could only do it to a certain degree because a lot of the arches were closed off. I took little lamps and hid them, which was a bit fiddly. It was interesting to do, and it was lovely, actually, and I think it works very well in the picture. It's seamless." △

Ron Magid is a regular contributor to these pages.

Sarah, played by Jennifer Connelly, encounters the strange Fireys, who are able to disconnect their heads and limbs.

Photos by John Brown and Nancy Moran

Goblin World Created for *Labyrinth*

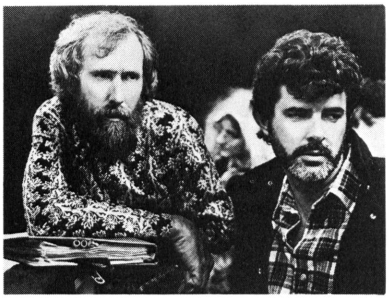
by Ron Magid

A vast maze rises up against a painted summer blue sky, luring a young girl deeper into its heart, towards the seductive palace of the Goblin King. Her way is fraught with unexpected perils and pleasures, but as she encounters the terrors of this strange new world, she is aided and befriended by a wise old wizard, a gigantic but lovable monster named Ludo, and a spry old dwarf called Hoggle. You won't find this mythical land on any map, but in the fertile imaginations of Jim Henson and Brian Froud, two magicians who once before combined their artistry to create the fantasy universe of *The Dark Crystal.*

Henson maintains that *Labyrinth,* resembles *The Dark Crystal* only in its attention to detail and fantastic characters and situations – but its tone is much lighter. "With *Labyrinth,* we started off to do a much smaller film, we started off to do a more intimate thing about the relationships between these characters, and also, we intended it to be lighter weight because of Terry Jones' (of Monty Python fame) screenplay. One of the best things about *Labyrinth* is it enabled us to do something like the muppets and slightly like *The Dark Crystal* – a nice middle ground." While *The Dark Crystal* depicted a world completely divorced from our own, Henson has wisely chosen to incorporate two human characters into *Labyrinth.*

Fantasy artist Brian Froud, whose beautifully illustrated volumes, *Gnomes* and *Faeries,* became an international publishing phenomenon, was not only responsible for designing the film's muppet characters, he also developed the original concept for the film. "It started with an idea of Brian's about a journey through a labyrinth," Henson remarks, "and then we went through a lot of different configurations of the story before we ended up with this one. Since *The Dark Crystal,* Brian did a little pop-up book of goblins, a delightful little book, and I wanted to get the feeling, the wit and the whimsey of these goblins into the film."

Top: ***A few of the denizens of Jareth's goblin city.*** **Below, left:** ***Director Jim Henson and executive producer George Lucas.*** **Below, right:** ***David Bowie as Jareth, ruler of the labyrinth, with some of his minions and the kidnapped baby.***



"We wanted to do something different from *The Dark Crystal* and create another world," Froud concurs. "We came up with the idea of goblins and a labyrinth, which we thought was a very interesting area to draw from. It's got a much lighter quality than *The Dark Crystal* and it's a lot more fun. I designed a general feel for the film, although production designer Elliot Scott specifically designed the sets. I went for a different color range. Whereas *The Dark Crystal* was very dark and took place in more of a twilight area, we felt we wanted more sunshine, so I went for much lighter colors and much brighter colors, with more reds in it. The lights are lighter and the darks are darker, so we've got quite a lot of contrast in the film as well, and there's more variety."

Normally, Froud's work is highly organic and realistic in tone, but Henson's insistence on lightness in every aspect of the production led Froud to experiment with a cross between his own style and that of the muppets. "I'm a great fan of the muppets and I always have been," Froud explains, "and occasionally I designed things that I felt were an homage to the muppets. Also, there are certain things that muppets do really well, and it's always wise to capitalize on your strengths.

While a character like the wise man who wears a hat with a bird's nest in it definitely recalls Henson's muppets, the giant friendly monster, Ludo, fits right in with the body of Froud's work. "We decided we wanted a nice big creature," he recalls, "and we thought it might be a challenge to come up with a fresh new side. Since the muppets have been used to create so many monsters, we decided to reinvent it, and hopefully, that's what we did. Ludo was a problem to build. It took a long time to make something that large fluid and believable. We certainly pushed the technical techniques further than has ever been done before in terms of making it believable."

One interesting aspect of working in films that is not usually present in Froud's artwork is the element of collaboration. "In a way, you have to submerge your ego, though ego's very important," Froud realizes. "It's a happy collaborative effort and I really enjoy working with all the different crafts people. The importance they bring to the project because of all their various skills you must allow to come through. You can't say, 'No, my way is the only way,' you have to allow their input. On *The Dark Crystal,* I developed small models to show what I wanted to do, but I don't need to do very much of that now. People work directly from my sketches, and I supervise every step along the way. Certain aspects of my designs work and others don't, and so the characters have to be redesigned and rebuilt, and I often change features or some part of them to overcome the technical problems. That's why I usually like to do my designs fairly loose and broad, so that as they're being developed in the workshop, they can be made to work properly. Once we've decided which ones we're going to build, it takes a long time to build them and

Above: ***Sarah approaches Jareth's castle, aided by Sir Didymus, Ludo and Hoggle.*** **Left:** ***Sarah and Hoggle search for little Toby.***

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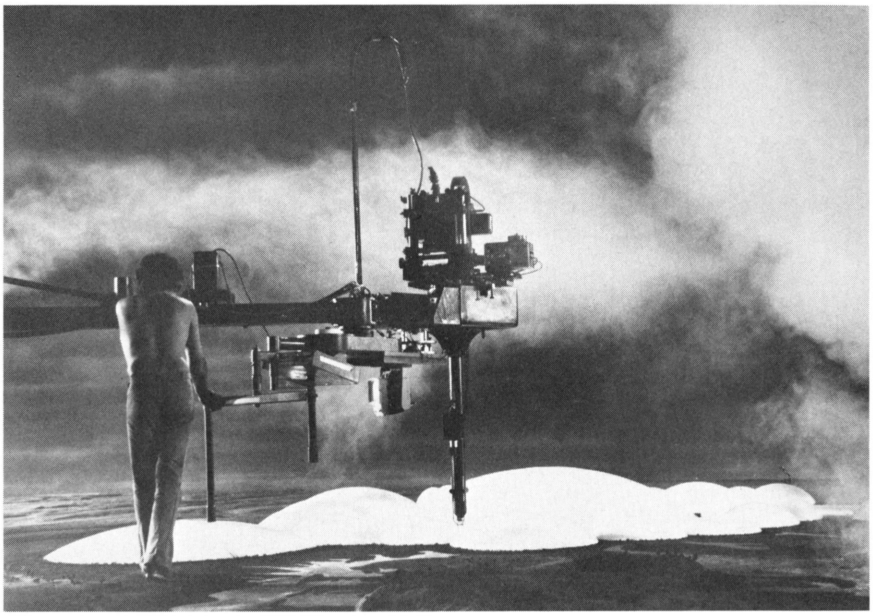

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there's a lot of sculpting. The sculpture is very important in terms of capturing the character, and so with the sculptors' help, we bring it into perspective. I'm always after the spirit of the character."

The complicated mechanism designed to operate the facial features of the dwarf character, Hoggle, was compact and versatile. "There are about 18 radio-controlled motors inside of his face," Henson marvels. "Originally, I had thought that we'd have one radio-controlled head and a more elaborate cable-controlled head for close-ups, but we found we were able to get the full movement with the radio-controlled one. In the past, things that complicated were virtually always cable-controlled, but we decided to radio-control it, which gave us a lot more freedom with the character, because now he can walk about the set while we're shooting."

The actress who portrays Hoggle in the film is "small person" Shari Weiser, whose petite proportions caused some problems when it came to manipulating the character's oversized hands. "We wanted Hoggle to have sort of large, masculine, clunky hands," Henson explains, "with mechanical fingers. Shari has very tiny hands which fit about inside the palm of this character's hands, and when she moved her fingers, Hoggle's fingers moved, which took a while to refine. Once we got that working fine, of course, she had no power or strength in these mechanical fingers, so she coudn't pick up anything, and therefore, everytime she actually had to hold something, we had to use another hand in a fixed position to hold the object."

Hoggle created other technical difficulties, mainly stemming from its built in video vision system, a refinement Henson had first employed on his "Fraggle Rock" television program. The vision system consists of a television monitor inside the costume and a camera which films the character's precise point of view, so that the performer inside is seeing exactly what the character would be. "We found when we first started to shoot with Hoggle that the whole video vision was not good, it didn't work well for her at all. It took us a little while to discover that, but she ended up looking through the mouth of the character instead." Oddly enough, the video system inside the gigantic

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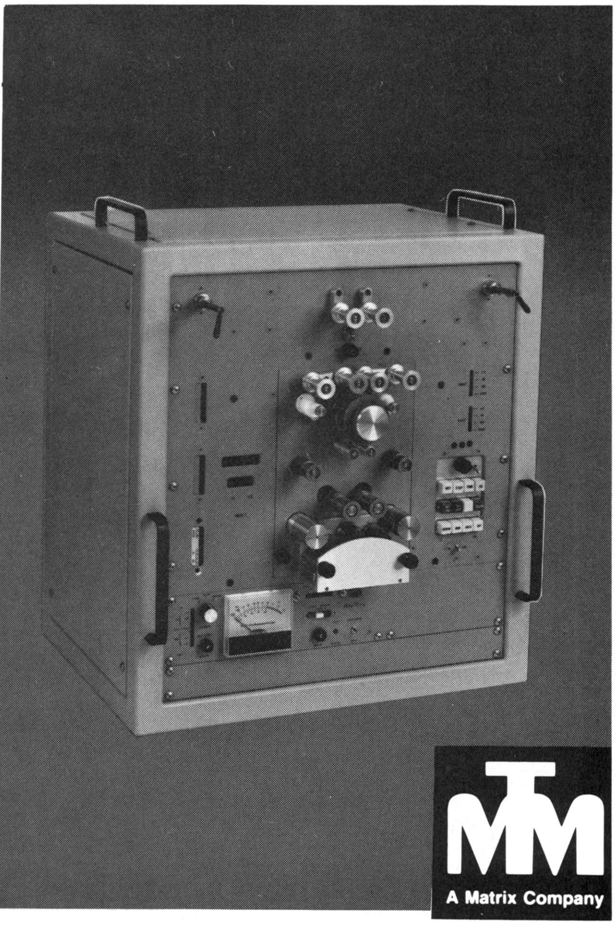

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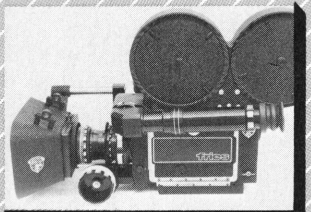

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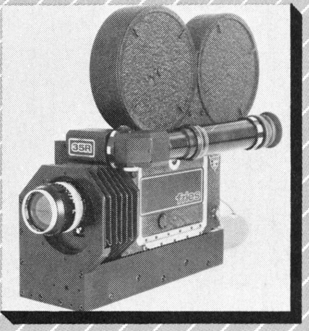

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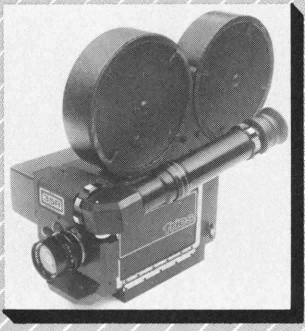

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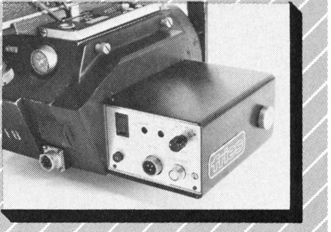

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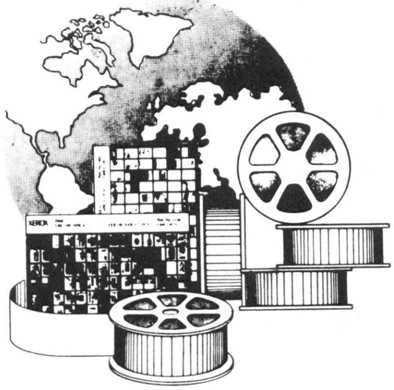

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Ludo costume, which employed two video monitors, one showing the character's point of view and the other featuring the actual shot, worked absolutely perfectly for the performer.

Despite the literal tons of extra equipment necessary to bring a film like *Labyrinth* to the screen, Henson does not view the technology as an end unto itself, but as a tool. "All of the technical stuff we do I think of basically as designed to get a better performance," Henson comments. "even when we have all of that radio controlled stuff, all it is really meant to do is to take a puppeteer's single performance and amplify it to make that performance more dimensional. It's always performance! You've got to start with a very talented performer in the first place, and all of the rest of that stuff is just icing and gravy – though not at the same time," Henson laughs.

It is because the performances of the muppets are so critical to the success of his films that Henson employs a virtual arsenal of video cameras and monitors. "Working to a monitor is absolutely essential to our performance," Henson insists, "and we have vitrually no performance without that monitor. We've always done that because of the way we manipulate the muppets. At all times, with all of our films, we've used a through-the-lens video system. Replaying the tape is not as important as being able to watch it while you're shooting, although we use the video a great deal throughout for all kinds of things. We use it the way other people would use continuity notes. We match to the previous shot because you can see all kinds of things. There's no argument about which hand was holding a pencil, and you can match the speed of movement from one shot to another. You can try things to see if they'll cut together such as from a wide shot to a closer shot, as is often the question. There were times when we'd have as many as several dozen monitors around the set, and occasionally we'd use a separate video camera just to get an extreme close-up of a character whose face we wanted to watch specifically for eye focus or lip movement, because all of that is critical. We're always watching for performance."

Directing a film of the scope and complexity of *Labyrinth* would have been an even greater task for Henson had it not been for the assistance of his son, Brian Henson, who took a great responsibility off his father's shoulders by coordinating and supervising the puppeteers. Additionally, to his father's surprise, Brian supplied the voice of Hoggle! "As we were working, Brian's voice developed and really captured the character very well. I like to work with the performer doing a voice at the time of the shoot because then you get a performance that relates to the voice, although most of the time we change it afterwards. We kept Hoggle's voice, although when I started I was certainly under the assumption that I would change it. In the final soundtrack, we took the voice and ran it through a harmonizer and dropped it down a bit in pitch, which gave it a quality that I think looked more like the size of the character. Brian was just terrific on this, and it was so much fun for me. He not only did Hoggle, he was also running that team effort as overall puppet performance captain, supervising the placement of people and the assigning of parts. There's quite a bit of work involved in getting people into place and also in running a performance workshop beforehand. It's so useful not to have the director do all of those things, because there's a full time job just getting the rest of that together," Henson explains.

The film's numerous stage-bound settings created their own unique problems. One of the trickiest of these locations was a large swamp filled with bubbling paint, known as the Bog Of Stench. "It's the Bog Of Eternal Stench," Henson corrects, "and if you step in this thing, you smell bad for the rest of your life! It also makes terrible, bathroom-y noises, and try to imagine the worst possible smells! George Gibbs of special effects designed our Bog for us, because it had to have special effects taking place in it. For a scene where Ludo calls the rocks and great boulders come to the surface of the water so they're able to walk across the bog, we had to be able to get the big rocks all the way down in there, which meant the bog had to be five or six feet deep. The Bog had paint in it which would periodically get splattered on our shirts, and it wouldn't come out. We had a character named Didymous, who

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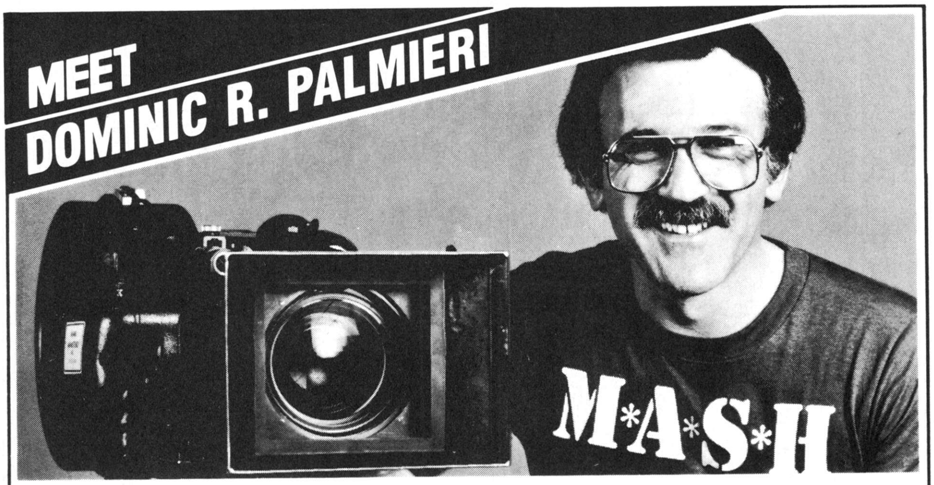

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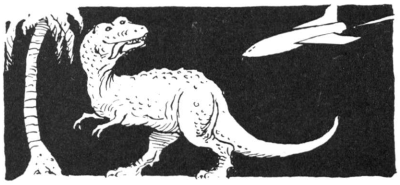

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rides a trained dog across the rocks – a complicated thing – because if the dog slipped in, and the stuff was slightly slippery, we would have had a sort of green-brown uncleanable dog! So he had to be on a safety wire, and so did Ludo. We actually built a set of pants for the dog, so he wore little booties and fur pant legs, because we figured we could catch him if he did slip in, but he probably would have gone in as far as half a foot."

There was a large staged fall in the film as well, as actress Jennifer Connelly, who plays the adolescent protagonist, Sarah, is swallowed up by The Shaft Of Hands. The set was built by George Gibbs, and the main problem seemed to be getting enough hands in there to make it look right. "We wanted to have the idea of Sarah falling through this shaft with all these hands reaching out for her," Henson says. "We had about seventy-five extras in there, a dozen or so of our own performers, and then another several hundred more stuffed rubber hands. We got everybody in and I looked at it and I said, 'George, there seems to be a couple hundred hands missing!' and he went slightly white but he had them for me a few days later. It was an elaborate rig, because Jennifer was in a body harness on a pole arm that went out straight behind her body, and then the camera would track right down opposite her. We shot it at London's EMI studios on the *Star Wars* stage, which is quite tall. Jenny was up at the top of the set in this harness, quite an uncomfortable thing. There was nothing underneath her, which is scary as hell, but she was such a trooper! If anything, she slightly enjoyed heights and she never complained. When we cast the part of Sarah, I had no idea how many high-altitude shots there would be and things where she needed to do near stunts until we got into it, and what I found is that Jennifer loved all the challenges and really did it well."

Another set the *Labyrinth* crew built up on the *Star Wars* stage was a goblin village designed by Elliot Scott, which featured some unusual built-in tricks to make it appear larger than it really was. "Scotty did some really daring things with false perspective," Henson recalls, "and the goblin village was built up with smaller houses at the end of the streets, and even in the mazes themselves, he would often use false perspective to extend the ends. The goblin town itself had to be one of the prettiest sets I've ever worked on. Scotty designed all of these wonderful little goblin houses that looked vaguely like a fairytale gone bad. They were just wonderfully old, sort of asymetrical and vaguely medieval looking houses, and we shot them every which way. Scotty is such a good designer and he knows his craft so well, it was so much fun."

Henson has longed to create an M.C. Escher-inspired sequence ever since he first began making movies, but the logistics of transferring Escher to the screen made Henson reconsider the approach to the material. "It's funny," Henson says, "I've admired Escher's work for years and I've always wanted to try to accomplish that on film, but in many ways, we didn't do it as much as we could have. It would've been interesting to try to throw everything every which way, but we don't particularly. I kept Sarah upright all the time, because if I decided to throw gravity off completely so she could then roam upside down and around the walls, my feeling was, what's going to be ground-zero for the audience? So I decided to keep her upright and I think that works because it's vaguely what the audience's perspective would be."

Henson's scheme works, and the sequence inside the goblin king's castle should go down as a landmark in fantasy film history. The logistics of the scene were quite complex, and Henson debated at one point whether or not to use mirrors to achieve the desired effect. "We considered that and actually, I think we had a mirror installed on the floor of the set, which we didn't use," Henson says. "We built a large set which was basically a box open on one side that we could shoot from all kinds of angles. There were a lot of different views we could get out of that one set, and when we turned the camera on its side, we ended up with many more possible views. We had art directors Michael White and Terry Ackland-Snow involved in working out some of the problems of using split mattes. It really was an art director's problem to try to figure out that if you want David to be walking upside down beneath where

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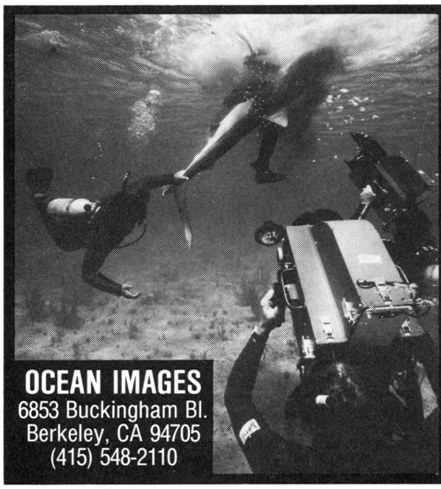

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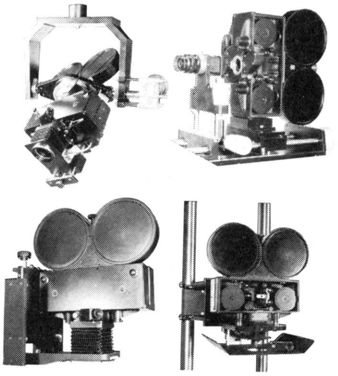

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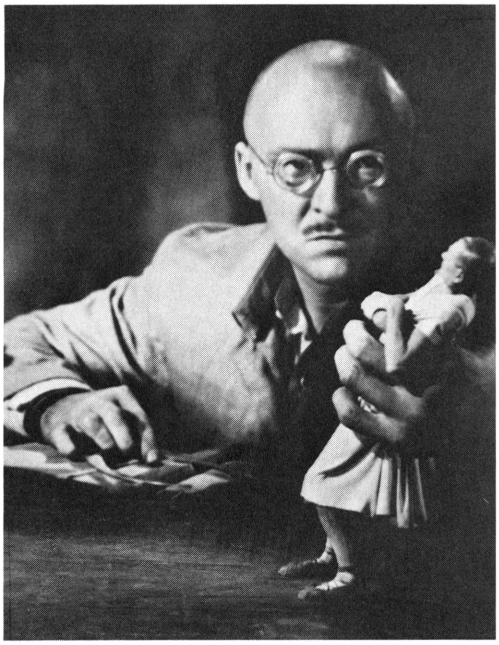

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Another simple but effective bit of trickery associated with the David Bowie character involved his seeming ability to manipulate several crystal balls at once. "I try to do as many of the film's effects as possible for real, in front of the camera," Henson explains. "There is a juggler I've known for years named Michael Moschun and he does a whole act with crystal balls, and as we put this film together, it just occurred to me that we needed David to manipulate this crystal ball, so I found a bunch of different ways to use Michael. We did things like placing his arm in the sleeve of David's costume while he's crouching down behind his back, and so that hand was not David's hand. Michael is really incredible, and he'd be looking the other way with his eyes closed so that he could just feel what the crystal ball was doing! We also did a couple of shots where we put Michael in David's wig and shot over his shoulder so he could use both hands. It ends up being pretty invisible."

There are a number of equally invisible but impressive miniature effects in the film, most notably a large scale model of the labyrinth at dawn that fades seamlessly into a painted backdrop, and a scaled down version of Sarah's house for the film's final shot. "The film ends with a party going on in Sarah's bedroom," Henson relates, "and there's this final pullback shot from the party going on at the house right up to the moon. We filmed a shot of the party and put that on a 16mm projector in the window of Sarah's room, and then the camera follows an owl from its perch outside the window as it flies up towards camera and then into the moon. We shot the owl separately as a radio controlled puppet and then matted that into the scene, which worked out nicely because of the moonlight."

Labyrinth's opening title sequence also involves an owl, created by computer animation courtesy of Digital Productions, the same people who provided the spaceship effects for *The Last Starfighter.* "They did a beautiful job building a white owl into the computer and animating it," Henson says. "It's a fascinating process. Every feather on the owl's wings is animated, some forty feathers, and the stylization of it is really quite beautiful. We have the owl flying past black mirrored walls, so you see the owl reflected in the mirrors as he flies along, and it's really quite elaborate."

One of the more elaborate aspects of *Labyrinth* is its multileveled screenplay by Terry Jones, based on a story by Henson, which reflects a rather unusual bent in its director's taste: a desire to create a film of substance. "I like a film to be about something and to relate to life," Henson elaborates. "This film is really about a young girl growing up, and how much of that shows up in the film almost doesn't matter, though it's what we had in mind when we put it together. To me, it's vaguely about taking responsibility for your life, because a lot of kids, a lot of *people,* don't take responsibility for their lives and they don't realize that they're the ones making their lives whatever they are. Sarah's favorite expression in the film is "It's not fair!", which is merely saying that something else is to blame!"

For Henson and Brian Froud, the ordeal of *Labyrinth* has passed, and what remains is an entertaining and technically superior fantasy film. Despite the years of hard and sometimes frustrating work, the two wizards may soon collaborate again on a television project, while Froud is also developing an animated film. △

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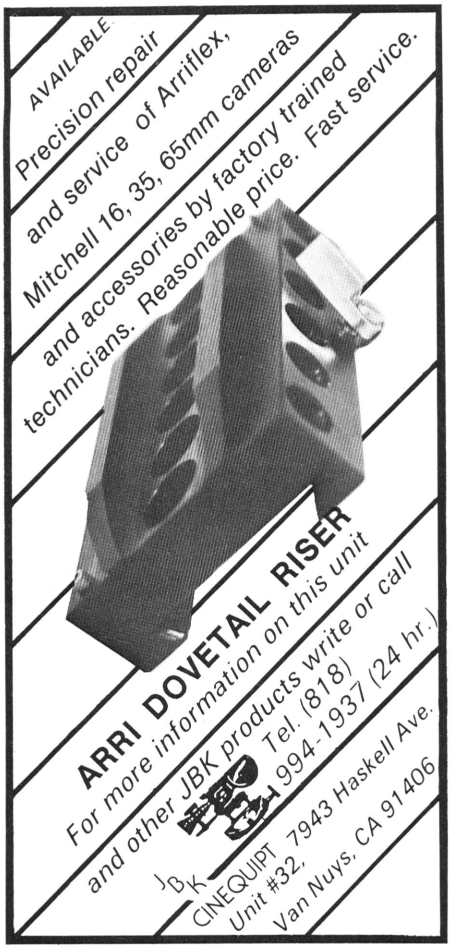
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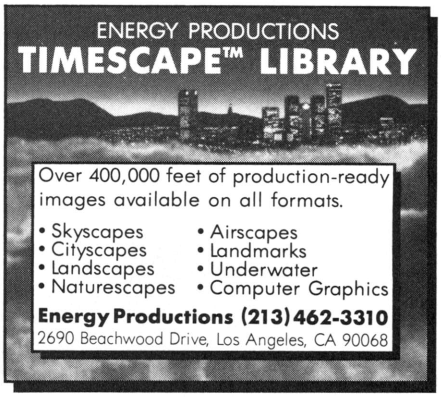

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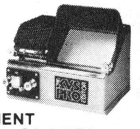

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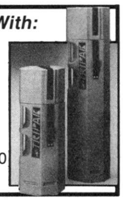

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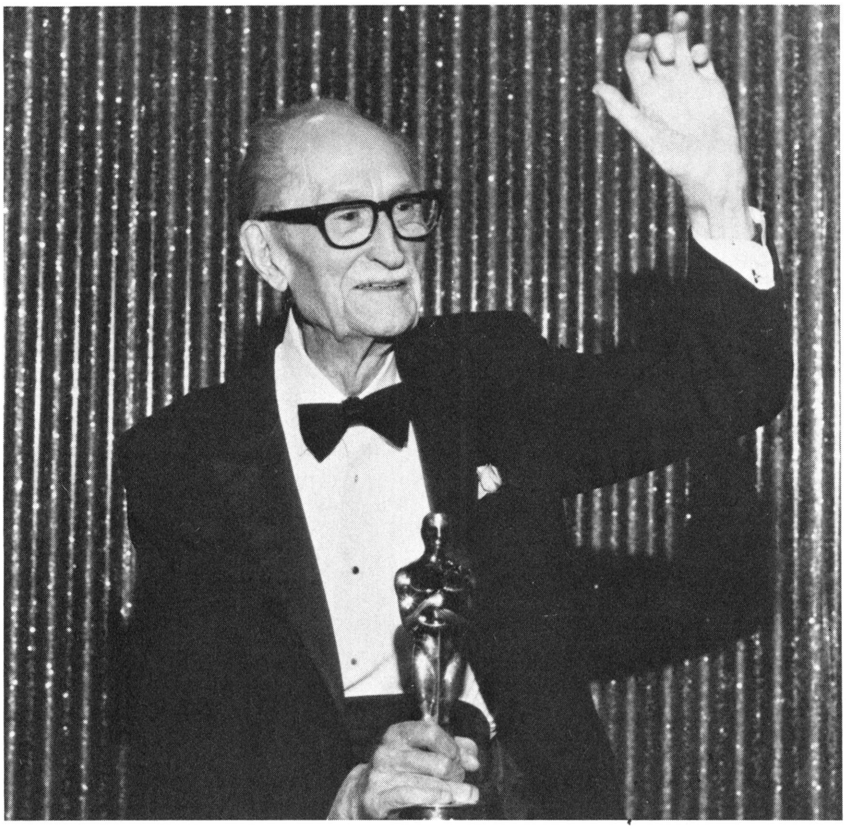

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Advertiser Index

Aaton/Zellan: 34
Alan Gordon: 24, 32, 52, 83
Anderson, Howard A: 51
Arriflex: 15
Audio Services: 4

Barbizon: 62
Bellevue Pathe: 86
Birns & Sawyer: 20, 25
Bolex: 60
Brooks Institute: 77

Camera Mart: 23
Camera Service Center: 18
Carpenter Sales: 83, 86
Century Precision Optics: 64
Chambless Productions: 85
Chicago Film Festival: 53
Christy's Editorial: 81
Cine Sound 5: 85
Cine South: 86
Cinefocus Ltd.: 59
Cinema Products: 16, 63, C-3
Cinema Services Inc.: 6
Cinematography Electonics: 81
Cinequipt: 79
Clairmont Cameras: 8
Colt Helicopter: 6
Columbia College: 79

Dreamlight Images: 86
Du Art Film Labs: 11

Energy Productions: 83
Engineering Model: 85
Excalibur Industries: 20

FGV Panther: 12
Fax Company: 83
Film Group: 32
Film Video Equipment: 26
Fries Engineering: 75

General Camera: 1
Great American Market: 10

Harrison: 57
Huston, Larry: 24

Image Devices: 70

JBK Cinequipt: 82
JK Camera Engineering: 79

K & H Products: 62
KB Systems: 82
Keylite Rental: 81
Knox, David: 4

LTM Corp.: C-2
Larry Edmunds: 86
Laumic Co.: 76
Lee Filters: 43
Leonetti Cine Rentals: 52
Light-Wave Systems: 12
London Film School: 78
Lowel Light: 2

MacGillivray-Freeman Film: 83
Matthews: 21, 61
McConkey, Larry: 55
Merkel, Daniel: 85
Miller Fluid Heads: 19
Mississippi: 55
Mole-Richardson: 58
Multi-Track Magnetics: 75

NCE of Florida: 86
Nalpak Video Sales Inc.: 83
National Geographic: 58
Newsfilm Laboratory: 82, 85
Norris Film: 51

Ocean Images: 79
Omnibus: 13

Pacific Title: 18
Palmer Films: 77

Rafik: 85, 86
Robert Abel & Assoc.: 5
Roessel Cine Photo: 70
Rycote Microphone: 81

SMPTE: 22
SMS Productions: 83, 85
Saxon Media: 83
Steenbeck: 27
Stevens Engineering: 86
Super 8 Sound: 69

Technological Cine/Video: 76

Ulland, Bob: 7
Ultra Light Manufacturing: 60
Ultravision: 17

Victor Duncan Inc.: 33

Whitehouse Audio: 83
Williams, Alan D.: 85

Yale Laboratory: 85

Zellan: C-4

BACK ISSUES

*Jan 1980 *''The Black Hole''*
*Feb 1980 *''Star Trek, The Motion Picture''*
*July 1980 *''Somewhere in Time''*
*Aug 1980 *''The Shining''*
*Sept 1980 *''Shogun''*
*Oct 1980 *''Cosmos''*
*Nov 1980 *''Heaven's Gate''*
*Mar 1981 *''Altered States''*
June 1981 *''Clash of the Titans''*
July 1981 *''The Lone Ranger''*
Aug 1981 *''For Your Eyes Only''*
Jan 1982 *''One From The Heart''*
*Mar 1982 *''Electronic Cinematography''*
*July 1982 *''Blade Runner''*
Oct 1982 *''Rebirth of 3-D, Pink Floyd, The Wall''*
Dec 1982 *''The Dark Crystal''*
*Jan 1983 *''E.T.'' & ''Gandhi''*
Feb 1983 *''The Winds of War''*
Apr 1983 *''Sophie'' and 1956 ''The Ten Commandments''*
*July 1983 *Special 3-D Edition*
Aug 1983 *''Krull''*
*Sept 1983 *''War Games''*
*Nov 1983 *''The Right Stuff''*
Mar 1984 *''Against All Odds, Creating a Mermaid for Splash''*
Apr 1984 *''Fanny & Alexander, Visual Effects for the Return of the Jedi''*
May 1984 *''Greystoke, Rumblefish''*
June 1984 *''Ghostbusters''*
July 1984 *''Indiana Jones''*
Aug 1984 *''Visual Effects for Star Trek III''*
Nov 1984 *''The River,'' Photography for ''Gremlins''*
Jan 1985 *Video & Visual Effects for ''2010''*
Feb 1985 *''Passage to India''*
Mar 1985 *''Creating Dinosaurs for Baby''*
May 1985 *''The Bride''*
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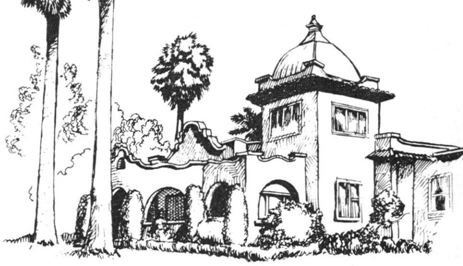


From the Clubhouse

Mr. and Mrs. Harry Wolf, ASC, were guests of the Japanese Society of Cinematographers during a recent visit to Tokyo. Several officers of the society, headed by President Kurataro Takamura, showed the visitors ''a royal time,'' according to Wolf. ''There is a good rapport between the two societies,'' Wolf said upon his return to Hollywood. ''We exchanged a lot of ideas and they know that their members are welcome to our meetings when they're visiting America.''

Mr. and Mrs. Harry Wolf dining with officers of the Japanese Society of Cinematographers in Tokyo. From left: Ted Fukuda, Mrs. Wolf, Kenji Takama, JSC president Kurataro Takamura, Wolf, and Ryuichiro Kiyatake.

• • •

Two well known directors of photography, James Pergola and Fred Schuler, have been elected to active membership in the ASC.

Schuler, who was born in Munich in 1940, aspired to become an architect. Curiosity about motion pictures led him to enter the field of research and development of movie cameras, where he worked from 1949 to 1966. Then he began working as an assistant cameraman in New York. He became a director of photography in 1974 on *Gloria,* directed by John Cassavetes, a picture acclaimed for its naturalistic cinematography. Since then he has photographed numerous features on both coasts.

Acclaim for Schuler's sensitive photography grew with *The Front,* directed by Martin Ritt, Woody Allen's *Annie Hall,* Sidney Lumet's *Network,* and especially Michael Cimino's *The Deer Hunter.* His later credits include *Soup For One, Stir Crazy, Arthur, King of Comedy, The Woman in Red, Fletch, Wise Guys* and the recently completed *Haunted Honeymoon* and *Armed and Dangerous.*

He and his wife, Sybille, live in Briarcliff Manor, New York.

Pergola and his wife, Virginia, live in Naples, Florida. Born in 1932 in New York City, he has been in the movie industry for more than 30 years. He began as an apprentice under John F. Painter, ASC, at Fox Movietone in New York, shortly after serving in the Marine Corps. He worked as an assistant on many of the new CinemaScope short subjects and travelogues, throughout the world. Later he assisted Gordon Avil, ASC, Irving Lippman, ASC, and Meredith Nicholson, ASC. As an operator he worked with Russell Metty, ASC, Frank Phillips, ASC, Charles Wheeler, ASC, and other leading cinematographers on a large number of features and TV series. In the early Sixties he was on many Ivan Tors projects which entailed shooting aerials, underwater scenes, and wild animals. ''After capturing so many wild beasts on film I've also had the pleasure of photographing some of Hollywood's real beauties such as Linda Evans, Brooke Shields and Suzanne Pleshette,'' Pergola says.

Recently, Pergola completed a pilot at 20th Century Fox, *The Wizard of Elm Street,* and a feature for Jerry Reed, *What Comes Around.* Other credits as director of photography include *Hot Stuff, Thunder and Lightning, Gambler II, Nobody's Perfect, Love Child, African Queen, Crash,* and *Angel City.*

A number of JSC members have attended ASC meetings in the past, and several are planning to be here during the next few months, Wolf reported.

The Last Page

Of Clouds and Linings

***Naunton Wayne, Peggy Bryan and Basil Radford in the H. G. Wells story which Universal removed from* Dead of Night.**

Many of us who love movies have mixed feelings about the so-called "videotape revolution." Even as we sadly note the shutting down of theaters for "remodeling" that never happens, we exult over the unprecedented opportunity to have a home library of favorite pictures at a reasonable cost. But then, many pleasures carry some burden of guilt.

One of the interesting aspects of videotapes is the fact that some of the older movies can now be seen in more complete versions than were shown in the theaters. In a recent issue we mentioned *Gunga Din,* now available from RKO Video as well as VidAmerica in a longer version than the original release print. RKO's new tape of the original *King Kong,* with the later censor cuts restored, is the best looking *Kong* since the 1933 theatrical release, filled with sharp details that should be a revelation to anyone who has only seen the dark, mushy prints shown in recent years.

Admirers of the Alfred Hitchcock melodramas can be grateful that a number of his early productions, which were made in England prior to his emigration to the U.S. in 1939, are available on tape in longer versions than were previously shown in this country. This is because some were taped from the original English prints rather than the shortened editions offered by American distributors.

Blackmail (1929), Hitchcock's first part-talking picture, survived the crossing virtually intact, with sound available to theaters on both film and disc. There was also a silent version, with variant scenes and some cast changes, which didn't arrive in the U.S. until its one-shot showing at Filmex some 50 years later. *Rich and Strange* (1931), released as *East of Shanghai* in the States; the first version of *The Man Who Knew Too Much* (1934), and *Sabotage* (1937) (*A Woman Alone* in the U.S.) also were shown complete in this country. *The Secret Agent* (1936) lost only 3½ minutes here.

By 1937, double feature programs had become established in most metropolitan areas. British pictures, being generally unpopular with American audiences (who, in those less international days, had difficulty understanding the dialogue) were usually scissored considerably by American distributors so they would fit into the lower slots on dual bills. Hitchcock's *Young and Innocent* (1937) was shorn of 14 minutes in the U.S. edition and retitled *The Girl Was Young.* The present tapes, available from several companies in the original version, show that what was thought (over here) to be a minor picture is actually one of his best. *The Lady Vanishes* (1938), highly praised in its 78 minute theatrical version, is even better in the original 96 version, which is also available on several labels. *Jamaica Inn,* released here by Paramount at 99 minutes as a bill topper, is 106 minutes long in the English edition.

Even one of Hitchcock's most delightful American films, *Saboteur,* (1942) is somewhat longer on MCA's excellent tape than it was when released theatrically by Universal. At that time the management of Radio City Music Hall objected to their showplace being used as the site of a fatal shootout. Universal, anticipating a Radio City premiere, obligingly expunged all scenes in which the theater was identified or identifiable. Also, the U.S. government demanded removal of a scene in which an actual U.S. warship which had capsized at a shipyard was made to appear a victim of saboteurs. What Uncle wants, Uncle gets, but now all is forgiven and it's on tape.

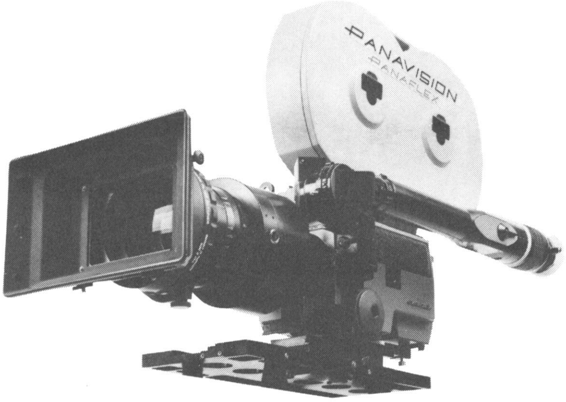
United Artists dropped 23 minutes from *Things To Come,* London Film Productions' spectacular 1937 filming of H. G. Wells' screenplay, when it was released here. A fully complete British version has not turned up on the numerous videotapes now in release (the film is in the public domain, like several of the Hitchcock titles). However, a number of the cut scenes are back in the Hal Roach cassette, which is longer than the U. A. edition by six minutes.

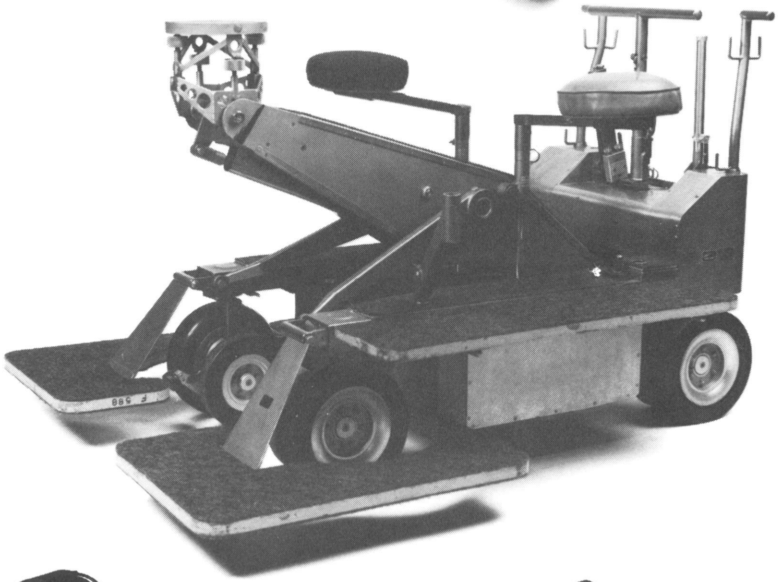
The British picture to suffer the most drastic trimming is the Ealing classic, *Dead of Night,* in which six stories were directed by four different directors. Universal's 77 minute edition cut out two complete stories, one in which Sally Ann Howes meets the ghost of a long dead little boy at a house party and a comical ghost yarn about two golfers—played by the great comedy team of Basil Radford and Naunton Wayne—who fall in love with the same girl. Some chunks were taken out of the framing story as well, adding up to a total of 25 missing minutes. Happily, this material survives in the 102 minute tape version from Thorn-EMI.

As they say, every cloud has a silver lining—or is it the other way around?

—G.T.

Some assembly required. Audience not included.





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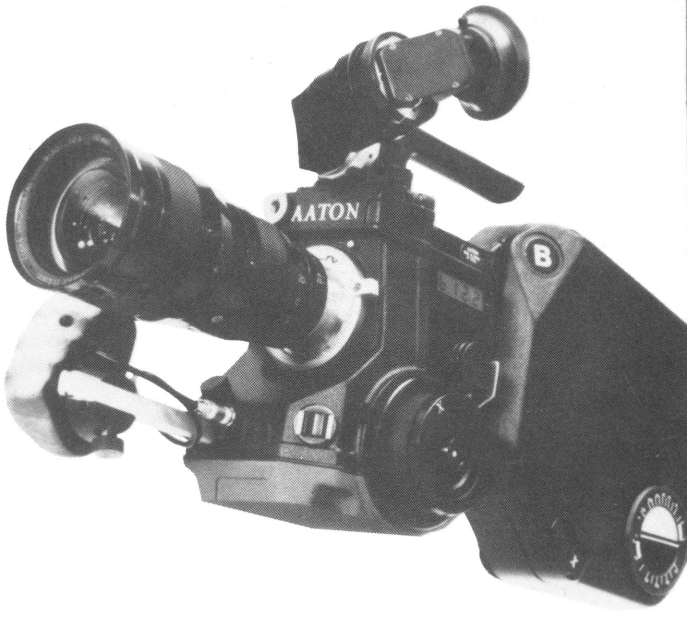

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